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SLEEP, SLEEPLESSNESS AND HYPNOTICS.

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A theory of sleep phenomena, to be complete, must have data for its construction drawn from wider sources than we find have been surveyed in the average physiologic essay on the subject.

Notwithstanding the strides made by biology, more particularly in its morphologic aspects, the past quarter century has added but little to Wm. B. Carpenter's summary of "Sleep and Somnambulism," in his famous "Physiology," or what is contained in J. G. McKendrick's article in the Encyclopædia Brittanica. A full bibliography is given in the *Dictionnaire Encyclopédique des Sciences Médicales;* McNish, Durham, Kohlschütter, Pflüger and Mosso afforded the main discussions, which have been added to but little by later writers.

Herbert Spencer (Principles of Biology, Vol. I., Chap. IV.) on "Waste and Repair," summarizes much that could be more directly applied to a satisfactory consideration of the study than was required in his "Synthetic Philosophy."

Spencer notes that reptiles maintaining no great temperature and passing their lives mostly in a state of torpor, suffer but little diminution of mass by waste, but with the higher order of animals which are active and hot-blooded we see that waste is rapid, and when unchecked, bulk and weight decrease, ending very shortly in death. From these and allied considerations, he formulates the dictum that in the same creatures there is most waste when most motion is generated. Valentin computes the carbonic acid exhaled by the waking marmot as seventy-five times more than when it was hibernating, and the oxygen inhaled was forty-one times greater in the waking state. Invalids who are able to take scarcely any nutriment, by being kept warm and still, are able to lessen waste by thus reducing force expenditure.

Experimental comparison between the hibernating marmot and starving pigeon shows the latter loses forty times more muscular substance than the torpid marmot, eleven times more fat, thirty-three times more alimentary canal tissue, eighteen and three-tenth times more liver, fifteen times more lung, five times more skin, so that the parts least consumed in hibernation are the hydro-carbonaceous deposits which serve as a store of force, while in the awake and active pigeon, equally unsupplied with food, the greatest loss takes place in the motor organs. The diminished ability of bodily organs to perform their functions after activity, is noted. That legs, arms and eyes become enfeebled, and that concentrated attention prostrates the brain, are familiar truths.

Repair is everywhere and always making up for waste. While awake, waste is in excess and repair is going on, but not to the same extent as when asleep; though repair is at this time in excess, still some waste is necessitated by the carrying on of never-ceasing functions.

"During activity, the reintegration falls in arrears of the disintegration, until, as a consequence, there presently comes a general state of functional languor, ending at length in a quiescence which permits the reintegration to exceed the disintegration and restore the parts to their state of integrity."

Extending these considerations of Spencer and those who had previously written to the same effect, we are confronted with the fact that tissue restoration is undeniably a chemic process, and the queries arise, why, in such states as cerebral congestion, with its surplusage of blood, the brain may not rest, and why should sleep occur at all if there is proximity of food to the tissues undergoing waste?

Surveying the physiologic accompaniments of sleep in all animal life, we find that in the simplest forms, surfeit and extreme privation arrest motions, and the rational explanation of this would be that the majority of molecules that compose such simple forms are relieved of tension, either by the completion of molecular construction or by their not having within combining reach, atoms with which combinations are possible.

Nutritive processes are certainly carried on during sleep, and the quiescence of sleep facilitates this action by staying the waste of such tissues as are most in need of such reparation and, obviously, nourishment is transferred from such parts as can spare it best to those that are deficient in this regard. If repair were instant and incessant upon waste, then sleep would not be needed to transfer nutrition about the body, and one of the best evidences of this is that, often, massage may so redistribute blood and feed the jaded tissues as to largely take the place of sleep, at times rendering it unnecessary. At other times, massage or a warm bath may induce sleep more rapidly by starting a redistribution such as takes place normally during profound sleep.

If we look upon sleep as merely an *effect*, or an accompaniment of a nutritive process, and as not in every case even a necessary one, we substitute a regard for the real instead of the apparent phenomenon.

In æstivation, amœbic encystment, hibernation, the absence of food requires quietude that will conserve what little there is present in the animal itself. In plethora, apnœa, etc., this quietude is enforced by the surcharged molecules being incapable of further assimilation, which drops the activity of the entire animal towards the lowest expression.

A parallel is afforded by the action of soil which at times agriculturists claim "needs a rest." It is conceivable that time may be necessary to effect certain chemic combinations even in the presence of

the requisite elements for the soil restoration. Fertilizers of appropriate sorts may cover the exhausted soil, but time is needed for the assimilation of such fertilizers and the ground must lie fallow until its productive capacity is regained, however long this may require; and very likely this necessity for a greater or less loss of time in building up complex cerebral or sarcodal structures explains why sleep occurs, and shuts off further decomposition until reconstruction can take place. The limit of comfortable activity having been reached, sleep takes place because further drain through waste may be distressing, and this discomfort becomes agonizing when prolonged, a fact taken advantage of by the Chinese as a method of torturing criminals.

Less heat and carbonic acid being produced during sleep further indicates the reduction in chemic decomposition that then occurs. Helmholtz estimates 40 calories produced during sleep and 112 when awake. "He who sleeps, dines," is an old saying, and much sleep favors obesity.

Mass motion being suppressed in sleep enables molecular rebuilding the better, as the molecules are not then engaged in the major activities but eat, so to speak, themselves, while the body rests, just as workmen take an hour off to dine, and discontinue the work upon which they are aggregatedly engaged.

Whenever supply is constant to the animal or to its tissues, the necessity for sleep diminishes in proportion to the ability of such animal or tissues to rapidly reintegrate the compounds destroyed. The differences between the sleeping habits of animals are thus at once explained. It is conceivable that animals may exist whose nearly every cell is so constantly bathed in absorbable food as to place it comparatively beyond the need of sleep, but such animal, as a rule, could not be very highly organized, or, like the sloth, could not be very active, and the rete mirabile in the axilla of the sloth shows how part of the muscular strain is provided for while the animal hangs to the tree.

A still further important factor in this connection I communicated to *Science*, New York, Nov. 11, 1892, in an article entitled, "Preliminary Note on Sleep:"

"That there is a relative anemia of the brain during sleep is well established, but the hypotheses advanced to account for this or any other of the sleep phenomena are unsatisfactory. In "Comparative Physiology and Psychology," 1884, I treated the subject briefly, and since then have been gradually accumulating and arranging data for a theory which I have finally adopted, and which appears to me to be fairly complete as enabling the major phenomena to be accounted for.

"Briefly stated, where there is physiologic waste there is, normally, repair, and the activities of the brain demonstrably are kept up by renewed nutrition derived from a blood supply adjusted to the ordinary needs. When there is cerebral anemia, as in chlorosis, then there is increased desire to sleep, the brain does not receive the necessary quantity to compensate waste, and it rests, just as any commercial activity will cease with withdrawal of means to continue it. Those who are familiar with my nutrient reflex theory, mentioned in the book referred to (Professor C. K. Mills of the Pennsylvania University, and Professor C. L. Herrick of the Dennison, Ohio, University, have written approvingly thereon), will understand that with the cessation of sensory stimulation there will be less blood attracted to the brain and other nerve centers, the heart-beats lessen in vigor and number, and, with the pulse-rate fall there is ordinarily less blood in the brain.

"Now, it is evident that the anemia of sleep is not caused by constricted blood vessels, else there would be the facial pallor seen during an attack of epilepsy, or paroxysm of anger or fright; and with this quieting of the brain processes by stimuli withdrawal, such as is afforded by darkness, silence and absence of irritation generally, a further lessening of molecular interchange in the brain occurs; and I claim that *it is the molecular activity in the brain that attracts the blood there chemically and mechanically*, and the sympathetic, or vaso-motor system has evolved to facilitate this regulation of demand and supply. Then, granting this, there will be, during sleep, a passive condition of the blood vessels, and the blood supply will fall to a minimum.

"An extension of these considerations will enable all that pertains to sleep to be accounted for, such as aestivation, hibernation, insomnia, dreams, and all derangements of sleep."

At this stage we may conveniently condense what otherwise could easily fill a volume, in reviewing as much of sleep phenomena as may be necessary to test the consistency of this mainly chemic theory. Larval and fetal inactivity or sleep, the prolonged sleep of infants and the drowsiness of pregnant females can be understood as demands for lessened activity during constructive processes. An army is recruited and accoutered before it fights, and the molecular cell building is the process of getting ready for the major life activities.

The suspension of consciousness during sleep is apparently due to the lessening of function of organs generally. Consciousness, being a function of the gray matter, or central nervous system, is in abeyance because the gray matter is undergoing reconstructive rest as well as other portions of the organism. Imperfect sleep and dreams are caused by this rest not being complete, the circulation in these centers being irregular.

Worry notoriously exhausts more than many kinds and degrees of work, and sleep overcomes the exhaustion produced by this as well as other excessive brain taxation. In such instances we have a painful cerebral activity, and the molecular breakdown is greater than in simple mental application.

Stimuli withdrawal ordinarily lessens the nutrient reflexes, less blood is forced to the head, and the fall of blood pressure in the medulla drops the heart beats to a lesser number through pneumogastric action. Closing the eye reduces optic excitation, noises are heard and the blood does not immediately fall to a minimum in the brain, hence sleep may not appear until time has passed. As the vaso-motor reflexes are less and less called upon, an ebb of blood finally admits of obtuseness to noises, etc., when they do occur. With the restoration of general cell nutrition, the desire for activity increases and general reflexes are easier provoked. The nutrient reflexes of the brain now begin to send blood there upon stimulation, and the person awakes with the noises and light of day, or upon slighter provocation, if these are absent. The instance is often cited of a boy who was blind and anesthetic, who fell asleep when his ears were closed to sounds.

But stimulation is a relative matter, for many who are accustomed to continuous noises become adjusted thereto, as does the miller who is awakened by the machinery stopping. In Arctic regions, also, the exclusion of light is not necessary to induce profound sleep.

Somnambulists have been separately classed as the speaking, the acting, the speaking and acting, and the hearing, seeing, speaking and acting. In all these, consciousness is absent, hence somnambulism is more or less automatism of important organs; dream acting. Sleep, to be complete, must overtake all portions of the body, and if from any cause irritation persists in any part, as during pain, then imperfect sleep results. It is conceivable that a speech center, centers for arm and leg movements, etc., may be hyperesthetic independently of the adjacent parts. Dr. George W. Jacoby, in a paper read before the New York Metropolitan Medical Society, Feb. 15, 1893, ably surveys the matter of "periodical sleep seizures of an epileptic nature," in which this sort of unconscious automatism is mentioned, and he believes that there is a relationship between the corpulence in some of these cases, such as that of Dickens' fat boy, Joe, and perverted nutrition due to a pathologic condition in the psychic centers. Dr. Jacoby concludes that "sleeping attacks, occurring alone or in combination with other symptoms, if of brief duration and followed by amnesia, are probably epileptic in character. If somnambulism, particularly of a noisy kind, is present, this probability becomes a certainty."

In narcolepsy, he claims that there is consciousness of what is going on during the attacks, the patient is not obtuse when awakened and he at once has full possession of his intellectual faculties. In this instance it would seem as though consciousness was the only faculty that was not asleep. Hysterical lethargy is associated with other evidences of the disease, such as more or less hemianesthesia. Hysterical sleep, in my opinion, is directly due to partial brain ischemia through contracted blood vessels to one or more parts. The amblyopia, deafness, aphonia, etc., could be also thus accounted for, as well as the fact that sudden impressions, or the cerebral suffusion produced by nitrite of amyl, cut short the attack.

The prolonged somnolence of cerebral syphilis, Buzzard (Diseases of the Nervous System, p. 288) assigns to the remarkably thickened walls of the arteries at the brain base—usually of a nodular character—diminishing the caliber of the vessels. Huebner, in Ziemssen's Cyclopædia, also has important observations upon this subject: "The consequence would appear to be that the cortical substance of the hemispheres must be starved of blood to a considerable extent."

The great sleeplessness of mania for long periods and the supervening emaciation, show that not only cerebral but general rehabilitation is interfered with; waste is not only in excess of repair but the latter is seriously impeded by disease. Hence the necessity for sustaining treatment in this disorder. I have occasionally known stimulants to secure an abatement of the furor and produce sleep, when other routine measures merely added to the trouble. The hot bath, while temporarily beneficial, too often is followed by collapse, additionally going to show the necessity for sustentation in many of the cases that are frequently overdosed with depressants.

Warmth, judiciously used, however, is attended with good results. The fact that so many of the insane sleep best on hot nights should not be lost sight of. In Griesinger's "Mental Pathology and Therapeutics," page 75, et seq., sleep, in connection with insanity is well considered, and he particularly compares insanity to dreaming.

Preyer originated the blunder that sleep was caused by a toxic substance in the blood, upon the inference that as fatigue was associated with sarcolactic acid in the muscles, the latter was the cause of the former. Pflüger regarded sleep as cerebral asphyxiation from excess of carbonic acid accumulation. On the other hand, recent experiments point to increased consumption of oxygen during sleep. Evidently, as a definite amount of nitrogenized hydro-carbonaceous matter is consumed in all waking effort, cessation of activity lessens this consumption, but not to the extent of arresting it altogether, for the inevitable result would be a disintegration of the tissues.

The complex albumen molecule, $C_{72}\ H_{112}\ N_{18}\ SO_{22}$, with its 225 atoms, in undergoing metabolic changes, adds to and subtracts from its number of atoms within a certain range, and maintains its life and potencies. Let us say that twenty-five of its atoms are used up, exploded in exertion, and its limit of exhaustion has been reached. Plainly, these twenty-five atoms should be regained during comparative quiescence by other than toxic or asphyxiating means. In short, the cell eats while the colonial activity ceases, and this is the meaning, the end and aim of sleep. If, in addition, twenty-five more atoms enter into the combination, making it a still more complex molecule, a margin of fifty atoms may thus be imagined as enabling extra exertion within safe limits. Destructive metabolism could be supposed to ensue from several hundred of these atoms being parted with.

The chemic composition of the hypnotics affords no clue to their modus operandi. The mere presence of nitrogen in many is negatived by this element also occurring in ammonia and thousands of compounds with varying properties. Chlorin also appears as a food constituent in salt, as part of the anesthetic chloroform, and as a suffocant in its gaseous form. Neither the number nor the position of the atoms of carbon, hydrogen, nitrogen and oxygen in morphin explain why it differs from quinin which also contains these elements in other proportions.

Neither complexity nor simplicity of atomic combinations guarantees any explanation of the molecular rationale, but in a general way the more useful drugs have a constitution admitting of more or less direct conversion into animal constituents, and yet this is far from being a safe universal guide, for some of the deadliest poisons, even in small quantities resemble foods in their chemic structure.

In some instances, solubility modifies actions materially for better or worse, in others the looseness of the atomic make-up explains some effects, and the resistance to atomic splitting up, or the temperature necessary for decomposition, explains other effects. With what knowledge we possess we can formulate something in general from specific instances:

Alcohol, $C_2\ H_6\ O$, is rapidly assimilated and in a certain sense is a food. This rapid assimilation by reconstructing the tissue could account for its stimulant effect, and when there had previously been cell waste upon which the insomnia depended, the sleep-inducing properties of alcohol are accounted for.

The stupidity that follows over-indulgence is precisely what would occur from cerebral tissue surfeit.

Morphin, C_{17} H_{19} NO_3, upon thorough consideration also falls into this dangerous food category. It, with alcohol, though less rapidly, enters into molecular combinations with nerve tissues and induces a certain exhilaration and subsequent dulling of the senses.

The exhilaration caused by oxygen and the stimulant effects and later anesthesia of nitrous oxid gas, without doubt are owing to the rapid assimilation of these articles by the blood and nerve centers. The stimulant effects of all these agents could be ascribed to rapid atomic interchanges, such as occur with less swiftness and danger in the ordinary course of nutritive supply.

The warmer blooded birds take up oxygen more rapidly than mammals, and far more so than reptiles. The acidity of muscle and nerve substance in connection with blood alkalinity renders possible the conveyance of alkaloids, and make it likely that soluble alkaloidal hydrocarbons of the neurotic group, assimilable by the organism, have sufficiently close molecular resemblances to the acid protagon as to account for their mutual affinities and bio-chemistry.

In the constitution of protoplasm, as well as that of any compound whatever, there is a necessity for the absence of certain molecular groupings which would destroy the combinations if integrity is to be preserved. The cell environment is reached by adaptability, and in the differentiation of cells it is easily seen that what would be nutrient to one may easily poison another by combustion conversion, as with sulphuric acid, or affinities in lesser degree existing between the toxicant and molecule.

The life of the cell depends upon the absence of these deleterious molecules for which there are affinities, precisely as animals must avoid fire. Prussic acid, H C N, presents the simplest example. The nitrogen therein is in a dangerously assimilable form, and its sudden surcharging of the nerve centers with carbonized blood paralyzes the body. Even though the venous blood occurs after prussic acid has first caused the blood to appear to be arterialized, at least destructive chemic changes are instantly induced by this simply constructed poison. The action of nitroglycerin and amyl nitrite exhibit the swiftness of union between the nitrogen and important structures. Nitrogen has a persistent tendency towards its free inert state, and this very disposition confers upon it great physiologic importance. On the other hand, oxygen has a great antipathy to uncombined existence. These two mechanically mixed ingredients of the air play complementary parts in biologic phenomena.

Certain drugs have special affinities for certain groups of nerves, and white pigs and sheep are said to be differently affected by vegetable poisons from colored individuals, a fact accounted for, doubtless, by the presence or absence of pigment compounds which have affinities for or resist the influence of certain poisons.

The antidotal action of chlorin gas in prussic acid poisoning may be due to the former directly lessening the surfeit (so to speak) imparted by the hydrocyanic acid. The sedative property of small doses of the latter show that it has a nutritive value which larger doses exaggerated poisonously.

The theory that chloral, C_2 HCl_3 O, liberates chloroform in the blood is tenable notwithstanding the definite urochloralic and other urinary excretion after chloral ingestion, but how does chloroform, C HCl_3, cause anesthesia? Its solvent power over sulphur, phosphorus and fatty bodies, conjoined with its primarily intoxicating properties, might make it appear to combine slight nutrient with destructive effects, the latter acting later but more powerfully.

The greater safety of ether (sulphuric ether, $(C_2$ $H_5)_2$ $SO_4)$ and its readily decomposing into alcohol, sulphurous acid and olefiant gas, together with its stimulating property in small doses, point to the nutrient action outweighing its toxic or to the relative proportion of each being within safer amounts in ether.

It is doubtful if the bromids become substitution compounds in any of the animal tissues, further than to pervade the secretions and lessen activity by taking the place of nutrient materials. About as free nitrogen dilutes the air and lessens the quantity of oxygen respired, so may the inert bromid salts saturate the circulation in place of other materials that could enter into combination. If bromid salt ingestion passes a certain point, distressing insomnia may result, probably from the anemia exceeding what ordinarily occurs in sleep. Chloral, also, in large doses may utterly fail to do anything but cause distressing wakefulness and gastric irritability, especially in senile debility associated with heart disease. The significance of this being that waste is but increased by the chloral. Alcoholics in such instances act promptly and beneficially for easily understood reasons.

Ergot has an indirect hypnotic effect through its contraction of the blood vessels, upon the muscles of which it acts directly. Winckler's discovery of a coloring matter in secale closely resembling hematin might mean that oxygenation of the involuntary muscles is accomplished by ergot, and the contractility is thereby induced.

Though, strictly speaking, phenacetin and phenocoll can not be classed as hypnotics, their effects as sedatives and certain chemic considerations make them specially interesting as neurotics.

The antipyretic effects of acetanilid and phenacetin when combined with acids are destroyed; the earliest discovery of the kind being that of Ehrlich, that the acid sulphone group abolished the affinities of certain substances which they previously possessed for the nervous system. The existence of so many alkaloids having this affinity, taken in that connection, afford hints that some of the combining efficacy of neurotics depend upon the union of a base and radical in the nerve tissues, notwithstanding the fact that these alkaloids may be introduced into the system combined with sulphuric or other acids; such acidulation being looser than in the coal tar series.

An ingenious introduction of the basic glycocoll into the group whence phenacetin is derived rendered it much more soluble, and to this extent increased its ease of administration without altering the antipyretic and analgesic properties of phenacetin when thus converted into phenocoll.

Unlike the majority of synthetical antipyretics, phenocoll, according to Kobert of Dorpat, is not poisonous to animals and does not affect the blood. It has a slight stimulant effect upon the circulatory system. Phenacetin is closely allied chemically to acetanilid

and physiologically both phenacetin and phenocoll act as a modified acetanilid or antipyrin. What particular change in the construction accounts for this modification only great advances in bio-chemic knowledge will reveal, but it can be conjectured that differences in the closeness with which nitrogen, as well as other atoms are held in a compound, may unlock a molecule quicker or retard its entering into new combinations.

Considering the derivation of paraldehyde, its somnifacient influence might be regarded as similar to that caused by alcohol. The ordinary ethyl or acetic aldehyde being alcohol, minus two atoms of hydrogen, and paraldehyde is formed by the condensation of three molecules of aldehyde into one molecule. It is so easily split up, so sensitive to oxidizing agents, and so much care is required in securing a pure article, that with safer and better hypnotics in the field paraldehyde is not likely to come into general favor. Not only has the pungent aldehyde been found in it as an admixture but the poisonous amyldehyde also.

Urethane and its derivative, somnal, have been pretty well abandoned by physicians. "Antikamnia" owes its present popularity to advertising, and being but a mixture of acetanilid, bicarbonate of soda and caffein, according to Helbing (Modern Materia Medica, p. 3), it needs no further mention.

Were it not for chloralamid, which is rapidly superseding all modern synthetically constructed hypnotics, sulphonal would have remained in high esteem. In treating the insane, sulphonal has the advantage of solubility in hot tea or coffee and can therefore be given without the patient's knowledge. The common practice of administering the dry sulphonal leads to undesired effects, such as a prolonged but unsatisfactory drowsiness or stupidity usually the day after it is taken. The action of sulphonal has apparent reference to its alcoholic derivation through mercaptan. The derivatives, trional and tetronal, possess few if any advantages over the original drug, while it is claimed that the latter sometimes caused vomiting.

The substitution of chloral for opium created an epoch in therapeutics, notwithstanding the fact that chloral was found to have very disagreeable after effects and some dangers in its use. The advent of sulphonal enabled chloral to be largely superseded, but finally the discovery of chloralamid affords us all the advantages of chloral in the absence of its disadvantages.

The poisonous dose of chloral hydrate is not established; small doses have caused death and large doses have been tolerated. Idiosyncrasies cause wide variance in effects.

Chloralamid requires a slightly larger dose than chloral, but the former causes what resembles ordinary physiologic sleep to a far greater degree than is induced by chloral. In other respects the drugs are closely allied, except that the deleterious properties of chloral appear to be absent from the newer compound. Particularly the gastric irritation induced by chloral frequently destroys its usefulness, and chloralamid has no such influence upon the stomach, nor is it an irritant to any mucous membrane.

Some laboratory experiments of Kny of Strassburg, demonstrated that chloralamid was free from action upon the heart and digestive tract, nor did it cause congestion and the other unpleasant after effects of chloral, though he inferred that the latter was slowly released in the circulation from chloralamid, and its depressant effects were counteracted by the formamid which acted as a stimulant.

Thirty years ago, formiate of ammonium was used by Ramskill in the London Hospital for the Epileptic and Paralytic. He considered it useful in chronic paralytic diseases with general torpor, and he thought that it had a special tendency to the nervous centers. Formic acid is a circulatory stimulant, but too energetic to be useful except when chemically combined. It is one of the fatty acid series and has been found to exist in small quantities in the spleen, pancreas, thymus, muscle and brain, and in leucocythemia in the blood, urine, sweat and marrow.

An important group of animal constituents, called the amido-acids, is derived from the fatty acids by replacing one or more hydrogen atoms by the radicle amidogen NH_2. This includes leucin, tyrosin, glycocin, taurin, creatin.

As the amines, amides and amido-acids are nitrogenous organic compounds among the simpler organic proximate principles, it is a safe assertion to make that the union of the formamid with the chloral in chloralamid justifies the classing of this new preparation *among the nutrient hypnotics;* that is, among those like alcohol, which, when properly administered, supplies material that has been exhausted in the nervous centers, notwithstanding the superficial objection that some of these organic compounds are decomposition products.

Reasonably, much of the toxic influence of chloroform may be ascribed to the solvent power of that anesthetic over sulphur, phosphorus and fatty bodies, as these substances are important ingredients of nerve tissue. Now if this toxic effect is obtunded or prevented by the union of chloral with formamid through the former expending this deleterious solvent propensity upon the latter, and the formamid being so closely allied to the normal nitrogenous proximate principles as to act practically like a food, which we can all the readier assume from its slight stimulant effect upon the circulation, the combined nutrient and toxic effect of chloral in that drug and chloroform is replaced by *an almost wholly nutrient hypnotic in the compounding of chloralamid.*

Glycocoll (also known as glycocin, and amidoacetic acid) is the base which united with the phenetidine group forms phenocoll and renders it soluble. This base being an amido-acid, on the principle enunciated above, phenocoll should be a safer and more effective antipyretic and sedative than phenacetin.

The published attestations of physicians as to the usefulness of chloralamid are so numerous, but at the same time so uniform, that brief mention of most of the references would swell this article unduly.

There has been a notable absence of any disposition to decry the drug in any quarter worth attention. In the use of every hypnotic, as well as any other therapeutic agent, bungling administration occurs but this should not discredit rational exhibition. We may as well inveigh against water because it drowns.

Briscoe of Chicago, accounts for a few failures through some practitioners using hot liquids as a vehicle, when chloralamid should never be offered in any other than cold solution.

In my experience, the elixir has a delayed action as compared to the powder dissolved just before use, an effect for which I have not tried to account.

The facts that chloralamid is about one-half as expensive as sulphonal, and superior to it, one would imagine were inducements for hospitals to purchase it in preference to the older and costlier hypnotic, but in certain quarters the error prevails that chloralamid is only soluble in alcohol. This arises from the fact that in twenty parts of water, chloralamid dissolves very slowly at ordinary temperatures, between 60 and 70 degrees F. Where, for any reason, it is not desirable or convenient to use the small amount of alcohol, about a minim and a half to the grain, in preparing it for use, the aqueous solution can be prepared beforehand, half a day, or kept in the dispensary stock in that form.

Brandy or raspberry syrup are the most used vehicles; a drop or two of dilute hydrochloric acid to the ordinary dose facilitating solution.

It is to be hoped that the mistake so often made in giving sulphonal dry, will not be made in chloralamid administration, as its action may be delayed until the next day and cause a stupid half wakefulness not at all desirable.

Dr. Joseph Collins contributed to the July, 1892, *Journal of Nervous and Mental Diseases*, an excellent review of his experience with chloralamid in insomnia associated with various troubles, such as phthisis, pneumonia, neurasthenia, alcoholic delirium, senility, chorea, sciatica, lithemic headache, overwork, opium habituation, meningitis, and reports that he was particularly struck with its efficacy in two conditions, viz.: pain and excessive irritable activity of the brain.

An important feature he notes, in the treatment of certain cases, is to beware of giving drugs which will in any way militate against the excretion of deleterious matters from the system and lower the condition of vascularity, such as the preparations of opium and the bromids.

"In conditions where chloral is indicated," states Dr. Collins, "but some intervening symptoms contraindicate its use, such as weak heart and respiration, as in the asthenic stage of acute disease, or in diseases of the heart and lungs, chloralamid can be substituted with safety and with good results."

He sums up in favor of its safety and reliability, its absence of after effects such as headaches and its value as a hypnotic where pain or cerebral activity are prominent factors.

Taking other authors at random, we find that as to the time of action, personal idiosyncrasy determines differences, but to no greater degree than was observed with chloral, the average limit being from one-half to three hours intervening between the dose and its effect, the duration of sleep varying from two to nine hours.

In many forms of mental disease, chloralamid acted beneficially in relieving insomnia; regular sleep was induced in chronic alcoholics and in patients suffering from locomotor ataxia, even when they had been taking large doses of morphin. Other ailments in which sleeplessness occurred were alleviated to the extent of sleep procuring by chloralamid as follows: Cardiac asthma, chorea, neuralgia, rectal carcinoma, hysteria, spinal disease, delirium of cerebral hemorrhage, rheumatic fever, thoracic aneurism, gastric carcinoma, hepatic carcinoma, bronchitis, cephalalgia, chlorosis with mitral insufficiency, endocarditis and renal colic.

It has been effectively used as a sedative in seasickness, neuralgias and the sufferings of gastric ulcer.

The United States Dispensatory designated chloral as the most efficient soporific and the one most often used, and claimed that for producing sleep no medicine equaled it except opium, and to this it was preferable as wanting the properties which render opium inapplicable in certain cases, as in active congestion and acute inflammation of the brain and to a certain degree in constipation of the bowels.

In the rapidly accumulating literature of the subject, we begin to note that where chloralamid appeared to be ineffective in a certain disorder, in the experience of one author, other physicians obtained good results from its administration in the same ailment. In short, the history of chloral discussion is repeating itself in some of the contradictory experiences, but with the advantage for the later drug, that, wherever chloral has been established as of use, chloralamid proves not only more satisfactory, but where through deleterious properties contraindications for chloral using forbid its use in a large list of diseases, chloralamid has been proven to be perfectly safe. No hypnotic has won so universal favor in as short a period and without the arraignment against it of occasional unfortunate episodes.

The largest dose on record used at one time is reported by Dr. Lackersteen, *Medical News*, Nov. 25, 1893. A patient swallowed a mixture containing 140 grains of chloralamid with about 40 grains of bromids and fully recovered from the stupor which followed.

Personally, I have found it useful in facial neuralgia in small doses, and often sleep was induced by from fifteen to thirty grains when pain had previously prevented rest, showing that chloralamid has sedative or analgesic effects.

The restlessness of anemic states has been allayed by small doses, and in a few cases I have substituted chloralamid for the bromids in treating epilepsy with apparent benefit, alternating the drugs or using them conjointly so as to diminish the dose of each. It would require at least a year's experimentation in this disease with chloralamid to enable a more conclusive statement than that it has been satisfactory as far as used by me; but I have not excluded other medicines at these times except for such short periods in treating epileptics that not only will a lengthened period be required to determine how far chloralamid is useful in this ailment, but I would prefer to hear from numerous other physicians who may make similar trials before pronouncing unqualifiedly in favor of its continued use in epilepsy.

Against the distressing activity of hemichorea in adults, which destroys rest and prevents sleep for so long as to imperil life, I hope much from chloralamid as I had previously found that chloral was absolutely the only remedy that would afford the required sleep for a few hours at a time; had chloralamid been then known it could have been continuously used where the chloral had to be withdrawn owing to the stomach irritability it induced, substituting a source of danger equally grave. Dr. Barrs of Leeds, reports good effects from chloralamid in ordinary chorea. Some reports from psychiatrical institutes venture statements to the effect that chloralamid is good in one psychosis and not in another. Now the trials have been far too few to enable such assertions to be extended generally.

There is a strong probability that a large percentage of all cases of insomnia in the insane can be relieved by judicious chloralamid exhibition, particularly if attention is paid to accompanying conditions and general physiologic treatment is adopted at the same time. To merely impute the sleeplessness to brain disorder and give a hypnotic without reference to the condition of the heart, liver, kidneys, or emunctories generally, would be extremely irrational, and would fully account for failures in some instances. At times I have found that the insane patient would be affected differently by the same dose from no discoverable cause, but where proper attention has been paid to the general bodily condition, as a rule, good results were secured with chloralamid.

In delirium tremens, it is only common sense to see that elimination is carried on properly, and often eliminants alone will end the furor of alcoholism.

In some of the congestive attacks of paretic dementia, ergot if anything, would prove more useful, but paretics will secure sleep from chloralamid ordinarily, as well as other patients.

I have found it useful in the sleeplessness and painful cerebral states of melancholia, and particularly so in the case of one recurrent melancholiac whose relapses were cut short by the prompt action of the drug.

In cerebral and spinal syphilis, pain is assuaged markedly by chloralamid, but of course it should not be given where there is a stuporous tendency, nor with expectation of anything but amelioration.

In the traumatic neuroses it is particularly valuable. Several cases of Erichsen's disease from concussion of the spine were enabled to secure sleep from chloralamid when ergot, massage and hot water applications which had previously been helpful had failed.

If the small doses of chloralamid, when substituted for bromid of potassium, are found to be generally applicable, I do not believe that ill effects can follow from the abuse of the chloralamid in this way, at all comparable to what has been experienced in the wretched overdosing of the bromids. At least the anemia and mental hebetude produced by bromids will be escaped from by the substitution. And how far these small doses of chloralamid can be properly used remains to be ascertained, but my experience has been satisfactory enough to lead me to continue their use in many of the nervous affections where irritability or pain are prominent.

There is such a thing as the chloral habit, which is much more readily stopped than the opium addiction, but whether it is too early to assert that there is or is not a chloralamid habit, certainly nothing denoting any liability to habituation has been prominently mentioned, though so far as that is concerned any drug that proves serviceable in continued suffering may be used too long, and the only question of concern is what undesirable consequences may come from such prolonged use. If chloralamid is a reconstituent hypnotic there can be no such bad effects following its over-indulgence as are recorded against opium and chloral.

It would be folly to expect that any single remedy for insomnia would be available in all instances, for just as sleepless states may be caused by any of the multitude of maladies to which the body is liable, so must there be numerous appropriate measures of relief, when relief is at all possible. The advice to seek and remove the cause of the sleeplessness is sensible enough, though in too many instances the cause is only conjecturable. Nevertheless, a rational system of hypnotic use can be secured on a physiologic basis, and with far more satisfactory results if we duly regard the cause of the loss of sleep and existing bodily conditions. For example, a dose of ergot in some hyperemic states may relieve pain or cause sleep by lessening the vascular tension upon which these disabilities depended. A hot bath may distribute the circulation and act derivatively upon organs which, when congested, caused the distress and wakefulness. Massage acts similarly when scientifically applied, and when unskilfully made use of may add to the discomfort; for example, if derivation from the head is set up by massage it will relieve cerebral hyperemia, but add to cerebral anemia, so this method must be resorted to with full knowledge of the physiologic results aimed at.

In a general way, we may classify hypnotic action as accomplished by derivation, such as by removing irritative quantitative causes; by elimination of quantitative or qualitative causes, as of some toxic agent; reconstructive action by resupplying parts in states of defective nutrition; sometimes by minimizing activity until rehabilitation can overtake waste with supply; by restoring normal function as with digitalis or alcoholics. The least desirable of all methods being such as merely stupefy and overload the circulation with effete or poisonous material through interfering with elimination, or by destructive changes induced in nerve tissues or the blood upon which the nerves depend for sustenance.

So eliminative functions should be kept in good repair, if possible, when almost any kind of a hypnotic is given, particularly such as are likely to add some toxic material to the system; but the ideal sleep procurer would be one that abstracted nothing from the nervous system that it contained normally, nor added thereto anything deleterious; and as sleep is a process of repair or feeding of the nerves and their ganglionic centers, still more effective would be whatever caused sleep by repair of such waste; and unless credible evidence to the contrary appears in the course of time, we are in possession of such a hypnotic in chloralamid.

"CAN TYPHOID FEVER BE ABORTED?"

A FEW ADDITIONAL CASES, THEIR PROGNOSIS AND TREATMENT.

Read before the Mahoning County Medical Society, Feb. 12, 1894.

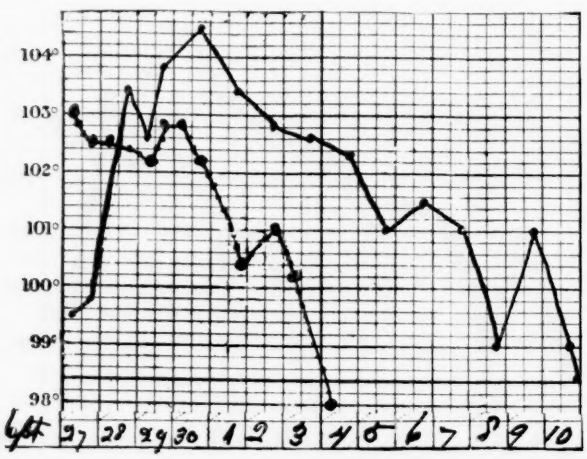
BY JOHN ELIOT WOODBRIDGE, M.D.
YOUNGSTOWN, OHIO.

[Continued from page 187, Feb. 10, 1894.]

In my last paper, published in the current issue of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, I concluded the history of my cases with No. 41, John Holland, and with a promise to report the case of his brother, Ralph Holland, together with six or eight other cases under treatment. Some of these cases recovered without having developed pathognomonic symptoms of typhoid fever, and consequently can not be reported as such.

Case 41—is especially interesting. I was not aware until several weeks after his recovery, that his attending physician, a personal friend of mine, after having made a diagnosis of typhoid fever, had been discharged and myself sent

for, although I *did* think the family unusually inquisitive; and answering questions I gave a diagnosis of typhoid fever and a prognosis of ten or twelve days sickness—no danger. On the seventh day of treatment when the rose spots were abundant and other symptoms well marked I asked Dr. Thomas, one of the best diagnosticians in our Society, to examine him and make a diagnosis; he did so and said: "Doctor, that is typhoid fever, and I will sustain you in that diagnosis at any and all times;" and added: "My experience with cases of this character is that recovery is slow and tedious." I said: "Well, I shall ask you to come here in two or three days to see a case of *aborted* typhoid fever." I said further: "Doctor, would you dare to give this man solid food?" "If he were my case I certainly should not," he said. Turning to the man I warned him of the opinions held by the best thinkers of the profession, and then asked him if he would be willing to eat a piece of beefsteak. He said: "Yes, if I told him to." He ate the steak without ill effects and on the ninth day I asked Dr. Thomas to reëxamine him when his temperature was 97. He was discharged cured on September 28. His brother, Case 47, residing with him, was taken sick September 29. Pulse 100; temperature 103. Tongue, severe headache and other symptoms characteristic; later, petechia abundant; dullness over spleen well marked. After treating him five days I wished to be away at the meeting of the Mississippi Valley Medical Association and the World's Fair, and asked Dr. McCurdy, a member of our Society, to take charge of him together with Cases 43 and 44 which he did continuing my treatment, so that in all these cases I had the advantage of his valued confirmation of my diagnosis. Temperature normal twelfth day.



Cases Nos. 43 and 44. Diagnosis, typhoid fever. Names, F. G. and Mrs. F. F. Date of admission, Sept. 27, 1893.

Case 45—was diagnosed by the attending physician, confirmed by counsel called from a neighboring town and after ten days I was sent for with the statement that little hope was entertained of his recovery. In five days his temperature was normal and recovery was rapid and complete. Oct. 31, 1893, Dr. J. J. Thomas who had seen the result of my treatment in two or three cases, telephoned me that he had a typical case of typhoid fever to which he would like to have my treatment applied. Examining the case, No. 49, I expressed the opinion that this was one of more than ten days' duration, that there was but a limited area involved, and that it was bordering closely on the stage of ulceration. He recovered in eighteen days.

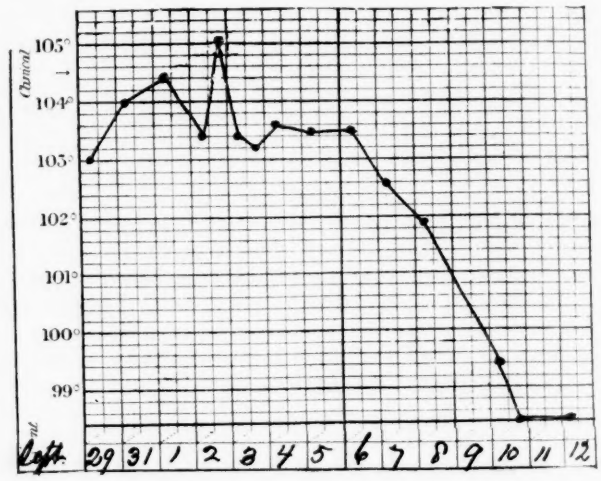
Case 50—presented well-marked and characteristic symptoms. (Recovery followed by alopecia.)

Cases 40, 46 and 48—are excluded from the estimate, because they recovered before a positive diagnosis was possible, as is also Case 42, because there was unquestionably ulceration of Peyer's glands before I was called.

Case 51—In the evening of Jan. 22, 1894, I was called to see Angus McFee. Examining him I said: "This man has had typhoid fever more than two weeks." They said: "Yes, he had a chill two weeks ago last night." The next morning I took Dr. McCurdy with me. We failed to get his morning temperature, which the night before had been 105½. He was voiding both urine and feces involuntarily, teeth, gums and lips covered with sordes which his faithful nurse, his wife, was unable to keep cleared away. His bowels were intensely tympanitic; in short, all symptoms characteristic. I hand you his chart to show the result of treatment during the first few days, which since has been far from satisfactory and the end is not yet. On returning from my first visit to McFee on January 22, I found a gentleman waiting to have me go to 221 Belmont Avenue to see Willis Hume supposed to have typhoid fever. He had been with his mother who was nursing her brother through a five weeks attack of the disease. His symptoms were well marked. Dr. Barnes examined him and confirmed my diagnosis. I hand you his chart, No. 52. Shortly afterward his brother, Guy Hume, was taken sick with symptoms of the disease. Pulse 112, temperature 104, but recovered before a positive diagnosis could be made.

On February 6 I was called to 940 Shehy Street to see Thomas Murdock, living within a few rods of McFee, his helper in the mill, and his friend and nurse during his present sickness. His symptoms were characteristic and indicated the beginning of a very severe attack of typhoid fever. His chart, No. 55, shows the result of treatment to the present time. After visiting him two or three times I told him he had typhoid fever, would be able to sit up and eat solid food in a few days. That there was no danger of his being as sick as his friend, or of dying. Dr. Robert D. Gibson, our last President, visited this case and confirmed the diagnosis.

Case 43—Frank Vogelbarger was a rather severe case of typhoid fever. I had attended his brother through an attack of the same disease some time before, from which he made a most satisfactory recovery. However, I did not keep a special record of his case.

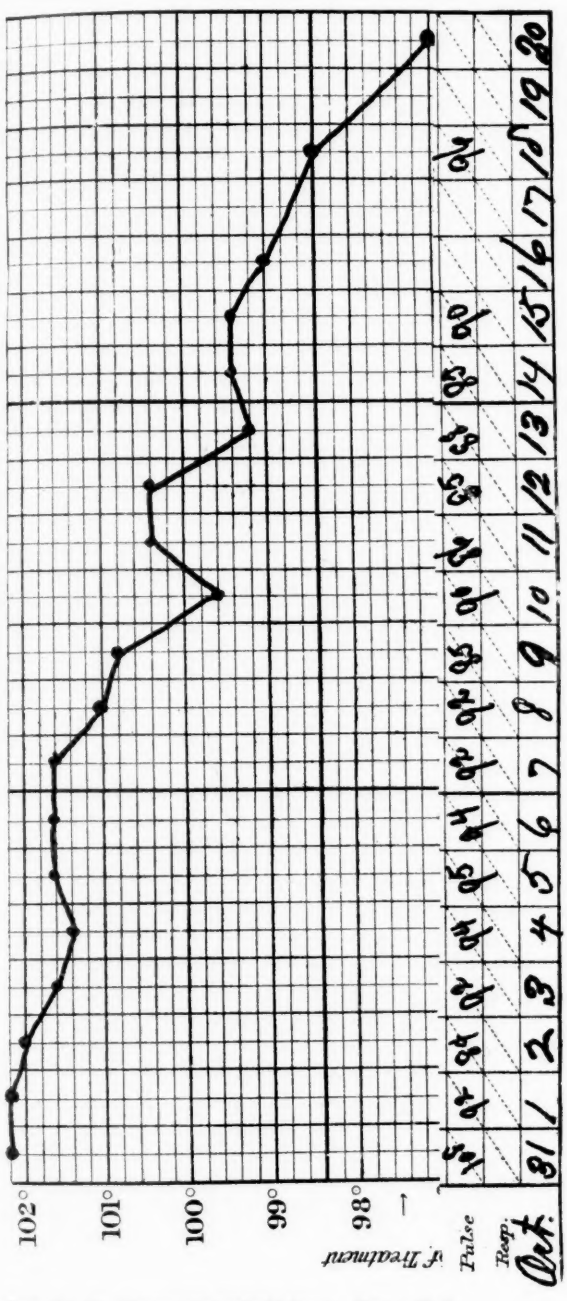


Case No. 47. Diagnosis, typhoid fever. Name, R. H. Date of admission, September 29.

With the exception of one patient who was dying when I was called, in consultation with the attending physician, and one other who had been sick thirty-five days, and recovered, and a few doubtful cases who recovered before a positive diagnosis was possible, these are *all* the cases of typhoid fever I have seen since my last paper was written. They round out more than twelve years of active work without a death in my private practice from this disease, while my brother practitioners are having no better average results than in former years, when *my* death rate was so high. Accept them for what they are worth, as additional evidence that my claim that typhoid fever can be aborted, and that the life of every uncomplicated case of typhoid fever can be saved is a valid one. That this claim will be hotly contested, no one familiar with the most recent literature on the subject can doubt.

What a contrast when compared with my personal experience during the first sixteen years of my practice, which amply justifies the editorial quoted in my last paper, when my death rate was enormous, and the average duration of illness of those who recov-

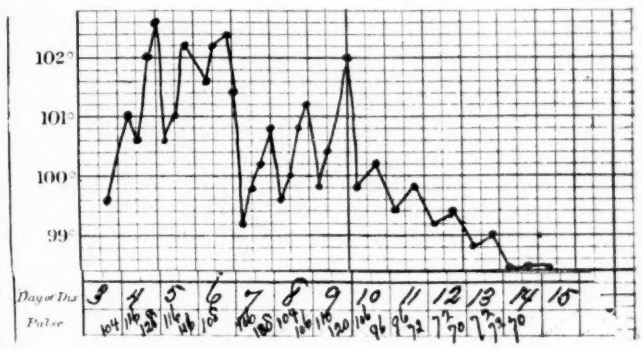
ered, as accurately as I can estimate it, was more than thirty-four days. As these estimates are made from memory aided by very insufficient data, the accidental omission of some of the milder cases may make both death rate and duration of disease too high. But giving myself the benefit of every doubt, and excluding the large percentage of those who died, the estimates show that those who recovered did so after more than a month of sickness that must have left their constitutions fearfully shattered. They



Case No. 49. Diagnosis, typhoid fever. Name, W. S.

recovered, too, probably more in defiance than as a result of treatment; a sad commentary on sixteen years of careful and conscientious work according to the best light obtainable from any text-book within my reach at that, or at the present time, as far as internal medication is concerned.

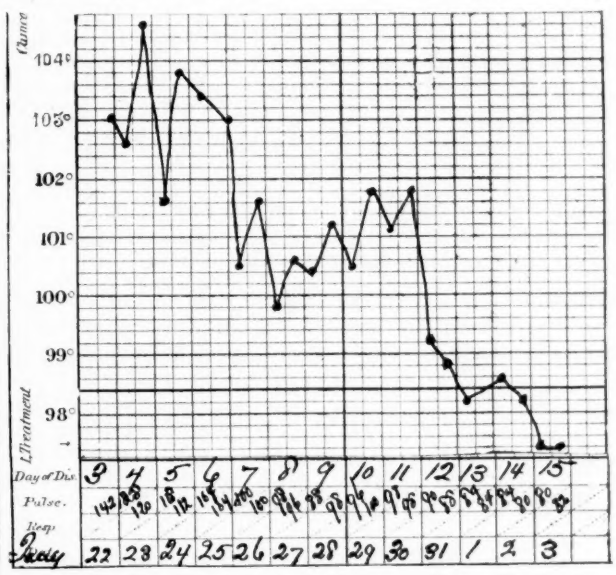
Do not understand me to state that the result of treatment during all of those sixteen years was equally bad. In 1876 a new light began to dawn on me, and during the following seven years to the beginning of 1882, when I had my last death from typhoid fever, my results were manifestly better, not alone in a greatly reduced death rate, but also in a great shortening of the average duration of sickness. In 1880, believing myself in possession of valuable knowledge on the treatment of typhoid fever, which ought to be given to my brother practitioners, I availed myself of the opportunity offered by a paper on the subject read in this Society by one of



Case No. 50. Name, B. C. W. W.

its ablest members; after criticising the paper in most unmeasured terms, I gave my own theories, and was much chagrined to find myself standing entirely alone in the advocacy of a method of treatment which, though crude indeed, had yielded to me most excellent results as compared with my earlier experiences.

Years passed, and in 1891 another paper on the same subject was read in this Society, advising a



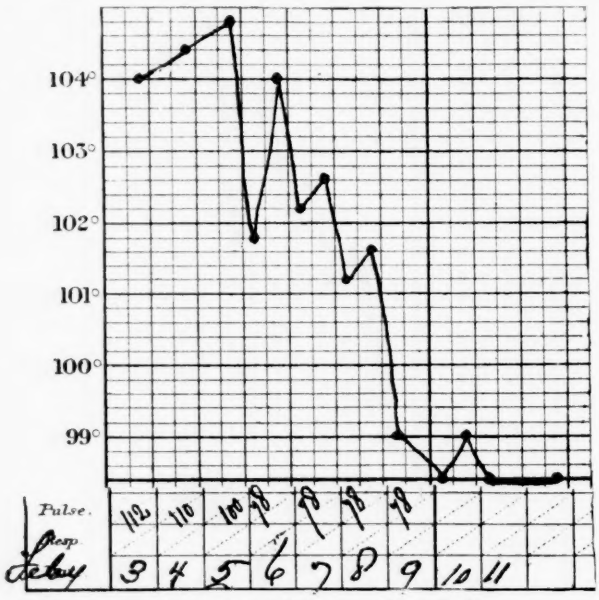
Case No. 52. Diagnosis, typhoid fever. Name, W. H. Date of admission, Jan. 22, 1894.

course of treatment only a little worse than the one I had so mercilessly criticised eleven years before. In criticising this last paper, after showing why its recommendations were not only unwise but absolutely dangerous, and driving its author to the refuge of the high authorities he had copied, and to the further statement that he had advised the remedies I had condemned as dangerous in *small* doses only; I said that I had long believed typhoid fever to be due to a germ having its earliest habitat in man in the ali-

mentary canal, and that when a germicide powerful enough to destroy the germ without detriment to the patient, could be brought in contact with it, that the problem of the abortive treatment of typhoid fever would have been solved, and that I believed the means of doing this were already at our disposal.

The questions now are, what are they, and how are they to be brought in contact with the germ they are intended to destroy, and what other object, if any, are we to seek to accomplish that we may most speedily restore our patients to their normal condition of health.

I must confess myself at a loss how to approach this part of my subject; admitting that the germ enters the system most frequently with the water and food taken into the stomach, finds lodgment there and multiplying, finds its way into the small intestines and further. I conceive that he will treat typhoid fever best who best measures the condition of his patient, or rather the extent of territory over which the germs have spread and the amount of mischief already done, and having done this, to select and apply his remedies in such manner as to most speedily stop their



Case No. 54. Diagnosis, typhoid fever. Name, D. N.

ravages and most effectually relieve the patient of the ptomaines, tox albumens, injuries to Peyer's glands or other ill effects of their temporary sojourn. This is a much too difficult task, I fear, for me to undertake to-night. Some time in the future I hope to give expression to my views on these points, but at present I think I can do no better than give the treatment of two or three typical cases, in connection with their bedside histories.

Case 51.—A. McF., (whose chart you have), as stated before, had been sick sixteen days when I was first called; his temperature was 105½; his bowels intensely tympanitic; he was voiding both urine and feces involuntarily. During the first two days he took about 60 minims eucalyptol,[1] 15 minims guaiacol,[1] 30 minims turpentine, and perpaps 15 grains of the following mixture:

No. 1.

R	Podophyllin,	gr. i.
	Hydrarg. chlor. mitis.	℥i.
	Guaiacol carb.	ʒ vi.
	Thymol	ʒ v.
	Menthol	ʒ i.
	Sacch. alb.	ʒ ii.
	Eucalyptol, (as much as possible).	

M. In very minute doses every half hour to one hour.

During the following three days, he took 2½ minims guaiacol and 5 minims eucalyptol every three or four hours all of the time, and part of the time double that quantity with an occasional 10 drop dose of turpentine added; and in addition small doses of quinin continuously every three hours; occasionally a 2½ grain tablet of Dover's powder. Nearly every day during his sickness, and sometimes twice a day, he had rubbed on his abdomen a mixture of eucalyptol and guaiacol, with the addition, sometimes, of turpentine. His kidneys failing to respond to the turpentine, there was given him a diuretic as follows:

No. 2.

R	Potass acet.	ʒi.
	Spir. nitri. dulc.	ʒss.
	Aquæ dest. q. s. ad.	ʒiv.

Sig. One teaspoonful every half hour in water or lemonade.

And when the bowels became constipated "glycerin suppositories" were used. Whisky, milk, eggnog and Fairchild Brothers and Foster's panopepton were given freely. This is the first and only case in which I have ordered thorough and systematic sponging, in my own practice, during the past twelve years; and I did so in this case only because he came under my care on the sixteenth day of his sickness.

Case 52.—W. H. took R No. 1 two days in about ¼ grain doses every thirty minutes.

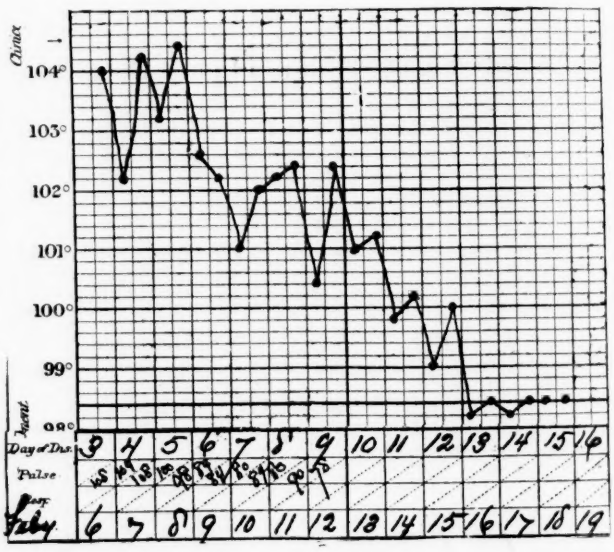
For two days:

No. 3.

R	Eucalyptol.	ʒss.
	Spir. rect.	ʒi.
	Guaiacol	ʒii.
	Aquæ dest. q. s. ad.	ʒiv.

Sig. One-half teaspoonful every three or four hours.

For one day, No. 1; No. 3, two days; No. 1, one day; then No. 3 until the temperature had been subnormal two days.



Case No. 55. Diagnosis, typhoid fever. Name, T. M. Date of admission, Feb. 6, 1894. Diet: Ate beefsteak on eighth day, beefsteak and blanc mange on ninth day, and whatever food he desired thereafter.

Case 55—T. M. took No. 1 two days; eucalyptol and guaiacol, two days; No. 1, one day; eucalyptol and guaiacol in one mixture, and thymol in another to the present time. (Feb. 12, 1894.)

This was practically the course pursued with the cases reported. I should have much preferred giving exact rules for a general course of treatment, applicable to every case, but do not feel competent to do so; nor do I know how much medicine has been given in any case because I never wrote a prescription for any of these preparations, but have always carried them with me and I poured out a sufficient quantity to last a day or two and when exhausted replenished it from my case. Since I see my dilemma, however, I shall leave a definite quantity and in a future paper

write more concisely; and yet I fear it will ever be a difficult thing to lay down fixed rules by which to treat such a disease as typhoid fever, in which the symptoms of the disease constitute a very imperfect criterion by which to measure either its duration or gravity, and almost none for treatment. While my cases may have been too few to establish the value of my theory of treatment, they have been too many and the results have been too good to admit of longer silence on my part.

Thus far in my private practice I have had no death from typhoid fever for twelve years. I have been able to abort two or three cases when first seen on the tenth day, and *all* who came under my care on or before the eighth day of sickness. It may not be possible to abort every case, beginning on the eighth day, nor is it necessary, for when the profession and the people understand that typhoid fever can invariably be cured when proper treatment is instituted at a sufficiently early period, the physician will no longer wait until his patient is covered with petechia, or has had one or more hemorrhages before making a diagnosis or beginning treatment.

In conclusion, I beg the gentlemen to understand that in criticising these papers by Youngstown physicians I wish to cast no slur upon my brother members of this Society. Their work was neither better nor worse than the teachings of the most learned members of the profession. I believe that the members of this Society are the peers of an equal number of the members of the profession in any spot on the globe. And when I invite criticism of my claims here, I feel that I am standing before a tribunal that would quickly find errors, if there were errors to be found.

OPERATION FOR THE RELIEF OF VALVE-FORMATION AND STRICTURE OF THE URETER IN HYDRO- OR PYO-NEPHROSIS.

BY CHRISTIAN FENGER, M.D.

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In all cases of pyonephrosis we may expect to find some obstruction to the flow of urine either in the renal pelvis, the ureter, the bladder or the urethra. If the obstruction is external to the ureteral opening in the bladder, the pyonephrosis is double; if on one side, the obstruction must be in the ureter or the pelvis of the kidney.

Lumbar nephrotomy for pyonephrosis has a mortality of 23.3 per cent., and primary lumbar nephrectomy a mortality of 34 per cent. (Tuffier.)[1] Secondary nephrectomy must be made to close the fistula after some time has passed, but this should not be delayed until amyloid nephritis of the other kidney has set in. The mortality from this operation is low, 5.9 per cent. If we add the 5.9 per cent. mortality from secondary nephrectomy to the 23.3 per cent. mortality from primary nephrotomy, the total of 29.2 per cent. is still 7.8 per cent. less than the mortality from primary abdominal nephrectomy, which is 37 per cent. and 4.8 per cent. less than the mortality from primary lumbar nephrectomy, which is 34 per cent. Consequently, in pyonephrosis, nephrotomy is the operation of choice. (Tuffier.)

The disadvantage of nephrotomy as compared with nephrectomy for pyonephrosis is that a fistula remains in 45 per cent. of the cases. This means that after a time a secondary nephrectomy must be made. Fistulas remained in 34 per cent. of the cases of calculous pyelitis and in 54 per cent. of the cases of non-calculous pyelitis. The smaller number of fistulas in calculous pyelitis is to be accounted for by the fact that in a certain number of these cases, the stone prevents the passage of urine, and with the removal of the stone, the obstruction is removed. Where there is no stone, simple nephrotomy will leave the impediment in all cases. If in both calculous and non-calculous pyonephrosis we can reëstablish the permeability of the ureter, we may expect to materially diminish the percentage of permanent fistulas.

Tuffier, in the discussion of pyonephrosis, in his excellent monograph on surgery of the urinary organs remarks: "It would be interesting to know the condition of the ureter, the strictures, bands, valve-formations that transform an open pyelonephritis into a temporarily closed hydro- or pyonephrosis. As yet these investigations for the intermittent pyonephrosis have not been made."

VALVE FORMATION AND BENDING AT THE PELVIC ORIFICE OF THE URETER.

Valve formation and oblique insertion of the ureter was first noticed in a case reported by Glass[2] and cited by Rayer.[3] A girl was born with right hydronephrosis and died at age of 23. At autopsy three gallons of liquid was found in the sac. On interior surface of sac the orifice of the ureter was seen as large as a goose quill. The ureter passed obliquely for twelve inches between the membranes of the sac, and was patent the entire distance to the bladder. On account of the non-obstruction of ureter, Rayer considers this the most remarkable case on record.

Rayer observed a case of double hydronephrosis in which the ureters were also patent, which he attributes to congenital malformation. The patient was a boy of 17, who had been sickly all his life, and had had pain for seven years in the region of the left kidney. A tumor was found and the diagnosis made of left hydronephrosis. He died from septic infection of the sacs. At autopsy, left ureter was found patent, the upper portion situated in wall of sac with an opening almost similar to a valve in a vein. Water passed easily from below upward, but not down from the sac into the ureter. There was a smaller hydronephrosis in the right kidney. The right ureter was dilated to the size of a lead pencil from the bladder up to the sac. At the upper end it was retracted and when water was injected from below, it entered the sac through an opening the size of the lachrymal punctum.

Virchow[4] in discussing hydronephrosis remarks: "The cases are extraordinary in which hydronephrosis exists with the ureter patent. I have examined such cases several times, and have found in each case a valvular obstruction caused by folding of the wall, due to oblique origin of the ureter from the renal pelvis."

[1] A word of caution about guaiacol and eucalyptol. Many of the specimens of both, obtained from highly reputable houses are wholly unfit for administration. In my earlier experience I had some very unpleasant results, especially from eucalyptol, much of which is inert and some absolutely poisonous. I have a dozen or more samples in my office now, all obtained from the best sources, and yet one-tenth of an ordinary dose of some of these would act as a most violent emetic. I believe guaiacol carb. to be the best of its class.

Simon [5] gives a full and comprehensive description of this condition. The ureter does not enter the pelvis of the kidney at its lowest point, with a funnel-shaped opening, but enters it at the side, at an acute angle, and often even runs for a variable distance in the wall of the pelvis. In two similar observed cases, the ureter ran, not in the wall proper, but between the wall and the peritoneal covering for seven to ten centimeters. In contra-distinction to the previous authors, who thought that valve formation was the cause of the hydronephrosis and therefore congenital, Simon believes that the hydronephrosis in its beginning causes the valve-formation and consequently that valve-formation is not a congenital affection. He has examined a specimen in which a stone was found in the ureter five centimeters from the pelvic orifice, in a case of hydronephrosis the size of a child's head, and with valve-formation in the upper end of the ureter. He believes that temporary obstruction from any cause may produce sufficient asymmetrical dilatation of the pelvis to give rise to oblique insertion and valve-formation, which when it once exists, even if the primary cause of obstruction disappear, may remain as a permanent obstruction of greater or less degree to the passage of urine. He considers valve-formation in hydronephrosis very common, as he found it in eleven out of eighteen reported cases.

The mechanical aspect of valve-formation in the causation of intermittent hydronephrosis was studied by Krakauer,[6] who made experiments designed to explain the fact that spontaneous evacuation of urine is sometimes seen in hydronephrosis due to this cause. Acting upon the proposal of Simon, Krakauer produced an imitation of the hydronephrosis due to valve formation in the following manner: He caused to be made a rubber balloon having a capacity of 150 cubic centimeters with a tube which ran for several centimeters in the wall before opening at an acute angle into the side of the balloon. When the balloon was filled to distension he observed that the first fifty cubic centimeters were evacuated readily, the second fifty cubic centimeters less, and the remainder still less readily. From this experiment Krakauer concluded that a higher pressure in the balloon, equivalent to an over-filling of the distended pelvis, is capable of overcoming a greater hindrance or impediment in the tube of exit, the ureter, than is a lower pressure. Applying this fact to the obliquely inserted ureter in the dilated renal pelvis, he concludes that partial filling of the dilated pelvis will close the valve of entrance and permit no evacuation through the ureter; further accumulation of urine and over-distension of the dilated pelvis will overcome the obstacle and the urine will be evacuated through the ureter. This fact explains the intermittent hydronephrosis observed in Case 1.

Landau[7] states that intermittent hydronephrosis, where there is no gross pathologic impediment to the passage of urine, is not so rare as might be judged from the infrequency of reports of this condition in the literature. He has seen four cases, all women aged from 30 to 60 years. In one case, infection pyonephrosis and perinephritis took place which necessitated nephrotomy.

The etiology of this condition was given by Landau as: *a*, bending; *b*, torsion; *c*, oblique insertion of the ureter. These conditions caused stagnation of urine in the pelvis of the kidney, dilatation of the pelvis, and then compression of the upper part of the ureter by the distended pelvis. These pathologic conditions of the ureter are in many cases caused by floating kidney. Direct traction upon the ureter has also been reported as the cause of hydronephrosis in certain cases of prolapsus of the uterus.

The amount of secreting kidney substance left is very variable; more of it is to be found in the smaller tumors, but even in large tumors secreting kidney substance may be spread out over a large surface. In one of Simon's cases he could feel the calices from the tenth rib to the crest of the ilium.

The ureter is small on account of atrophy from non-use. Its upper portion, which passes up through or in the wall of the pelvis, is stenosed from pressure of the sac. Its opening into the pelvis is a narrow crescentic slit sometimes only a line in length and often difficult to find on the specimen. (Simon.)

Spontaneous cure with *restitutio ad integrum* is impossible, because more or less kidney substance must necessarily be destroyed by the dilatation; but a condition almost identical with recovery is seen when the obstacle to the passage of urine disappears spontaneously, as for instance when a stone passes away. This is only possible, however, when no secondary valve formation has taken place. (Simon.)

TREATMENT.

Nephrectomy.—In large hydronephroses, often mistaken for ovarian tumors, nephrectomy or rather extirpation, is exceedingly difficult, as hydronephrosis is a retro-peritoneal tumor, and as in the course of the extirpation the meso-colon must be divided. At the time of Simon's report the mortality was absolute; in two cases where total extirpation was made, and in four cases in which it was tried and given up as impossible, all the patients died.

Puncture and Aspiration—are only palliative measures, and in only one out of eleven cases collected by Simon was there even temporary improvement.

Nephrotomy.—An abdominal opening into the sac of a hydronephrosis can not be done without first procuring adhesions to the wall, either by leaving the canula in or by Recamier's cauterization. The patients died either from the operation or later from infection through the fistulas, with the exception of two out of the eight, one of whom, (Spencer Wells' case) recovered accidentally by passing of stones. In the other case (Simon's) a fistula remained. Spencer Wells'[8] case was as follows: "A woman of 50 had had intermittent attacks of pain in the region of the right kidney for seventeen years. Having made a diagnosis of intermittent pyonephrosis and finding a large tumor with indistinct outlines, on May 19, 1865, he evacuated by puncture through the abdomen with a fine trocar, two to three pints of pus. Eight days later he reopened the wound and dilated with a laminaria tent to evacuate the accumulated fluid. One month after the first puncture, on June 20, two uric acid calculi the size and shape of a broad bean passed, followed by relief. After a few weeks the tumor disappeared and the patient was well for the fifteen remaining years of her life."

Obliteration of Sac after Nephrotomy.—The difficulty, we might almost say impossibility of curing hydronephrosis without reëstablishing the passage through the ureter, is well illustrated by one of Simon's cases. A man of 22 had a hydronephrosis

of sixteen years' standing, for which five abdominal aspirations had been made in seven years. A large abdominal incision was made after double puncture to get adhesions. Unsuccessful attempts were made to obliterate the sac by cauterization of the sac wall and its kidney substance. Partial extirpation of the secreting kidney substance was abandoned on account of hemorrhage. After this, the daily secretion diminished one-fourth, but 150 cubic centimeters were still secreted. He then attempted to open up the ureter from the pelvis, without success, in the following manner: He filled the sac with milk, but none passed down into the bladder. He therefore concluded to open the pelvic ostium of the ureter, or dilate it if valve formation was present. He enlarged the abdominal wound until the opening would admit the hand and then searched all over with artificial light and probes, but in vain. A year later the patient's condition was satisfactory as to general health, but 150 to 180 cubic centimeters of fluid containing 0.7 per cent. to 1.1 per cent. of urea was passed daily.

Simon therefore came to the conclusion that it is probably impossible to obliterate the sac of a hydronephrosis as long as secreting kidney substance remains.

Reëstablishment of the Passage through the Ureter—would give the best results in the treatment of hydro- and pyonephrosis, even if no *restitutio ad integrum* of the kidney is possible. (Simon.) Spencer Wells' case has proven that a condition may result in which the patient may be restored to perfect health. If it should be possible to reopen the ureter, the same good results may be expected as in Spencer Wells' case.

There are two ways in which the ureter might be opened; from the bladder or from the pelvis of the kidney.

1. Catheterization of the Ureter from the Bladder.—This is considered by Simon as the more natural and easy way in women. He succeeded in finding the ureter in fifteen out of seventeen cases. He therefore proposes in this way to empty the contents of a hydro- or pyonephrosis, but he has never put the method in practice.

The catheterization proposed by Simon, was taken up by Pawlik[9] who constructed his ureteral sound, later improved by Howard Kelly.[10] The catheterization of the ureters in women has thus been made practicable, but for the purpose of overcoming stenosis, or the cure of pyo- or hydronephrosis, little or nothing has been accomplished.

Pawlik mentions a case from Billroth's clinic, of pyonephrosis in which he introduced through the ureter from the bladder, a long elastic catheter with a metal point, which passed through a stenosis of the ureter up into a cavity above. From previous nephrotomy, the patient had an abdominal fistula, a probe passed through which would touch the metal tip of the ureteral catheter. On attempting to withdraw the catheter, the tip was caught in the stenosis and broken off. Dr. v. Hacker removed it through the abdominal fistula.

Pawlik[11] cited by Alberran,[12] has two reports of cases of hydronephrosis in which his method was used. In one case (observation 6) cure was accomplished after thirty successive soundings of the ureter. In the other (observation 10) the ureter was impermeable and nephrotomy had to be resorted to. As regards leaving the catheter permanently in the ureter, Pawlik mentions a case of uretero-vaginal fistula in which a catheter was left in for seven days. Force was necessary to remove it and it was found incrusted with salts.

2. Catheterization of the Ureter from the Pelvis of the Kidney.—Simon, after his unsuccessful trial in the case above cited, states that the opening in the pelvis must be large,in order to find the ureteral opening,and still, even if access is good, we will probably be able only in exceptional cases to sound the ureter and remove the obstruction, because in large tumors there is valve formation and so small a pelvic ostium that it can not be found in the large cavity, anatomic landmarks being absent, by inspection either with natural or artificial light. It would be only in exceptional cases where the pelvic ostium is dilated or not too small that it could be found and a probe inserted. If the pelvic ostium was found, a stenosis could be dilated with bougies or knives and the valve might be operated upon by cutting the inner wall away. Simon, however, never had occasion to bring these proposals into execution.

Landau recommends not nephrectomy but rather abdominal nephrotomy, eventually followed by probing of the ureter and perhaps by high fixation of the hydronephrotic sac, nephropexy, so as to facilitate the exit of urine from the pelvis into the ureter. Landau, however, has not yet operated in this manner.

The valve formation can be remedied by a plastic operation after previous opening of the dilated pelvis following lumbar nephrotomy. It is natural to select the lumbar region for entering the pelvis because the operation is extra-peritoneal, and consequently there is no danger of infecting the peritoneal cavity, and because the lumbar incision gives the readiest access to the upper portion of the ureter. If it is possible in this manner to reëstablish the flow of urine, we can save for future function what active kidney tissue may be left, the danger of primary nephrectomy is avoided, and the patient may regain perfect health without urinary fistula. That this can be accomplished satisfactorily and promptly is illustrated by the following case:

Case 1.—Synopsis: Valvular stricture or stenosis of pelvic orifice of ureter in a somewhat floating kidney; intermittent hydronephrosis for eight years; more and more frequent attacks until finally one a week; nephrotomy in interval between attacks; no stone in pelvis; pelvic orifice of ureter could not be found through opening in kidney; incision of pelvis; valvular opening of ureter seen; plastic operation on valve; bougie left in ureter for two days; pelvic wound sutured; fixation of floating kidney; recovery without fistula.

Mrs. D. H. consulted me at my office Feb. 22, 1892. She gave the following history: Age 28; family history good; previous health good; married eight years; two children living, one dead. Four months after marriage had an attack of pain in the region of the left kidney, with the formation of a tumor at the site of pain, immovable and tender on pressure. At the end of two weeks, tumor and pain suddenly disappeared. Two or three days after the birth of her first child she had a similar attack which lasted about eight days. She had intermittent attacks, every month or two from that time until 1878. The attacks varied little in intensity and persisted usually for about one week. In September, 1888, after the birth of her third child she had a severe attack of pain in the region of the kidney with frequent shooting pains along the course of the ureter and accompanied by a swelling, tender on pressure, and by difficult but painless micturition. This attack lasted for two or three weeks. Since that time she has had similar attacks every two weeks, which last on the average two days, and

are always accompanied by difficult urination. The last attack, which occurred on Feb. 8, 1892, lasted for a week. Since that time she has had no pain.

The patient began to menstruate at 10 years of age and has been regular until a year ago. Flow normal, but considerable dysmenorrhea. For the past year menstruation has been irregular, every two to four weeks, but the flow has been normal.

Present condition: The patient is somewhat emaciated, has a nervous suffering expression, not pale, abdomen easy to palpate, heart and lungs normal. Temperature 99 degrees. Urine contains pus, but neither albumen nor sugar.

On March 11, during an attack of pain, a tumor could be felt in the region of the left kidney, but five days later no tumor could be found. During and immediately after the disappearance of the tumor the urine was milky from pus. May 24 she had another attack which lasted two days. During the days of pain, urine is scanty and dark-colored.

Diagnosis: Intermittent hydronephrosis; stenosis in pelvis of kidney or ureter, probably from stone. Advised nephrotomy, removal of stone from kidney or ureter without opening into ureter if possible. If necessary to open ureter, pass bougie from opening in kidney to bladder, and suture ureter over bougie.

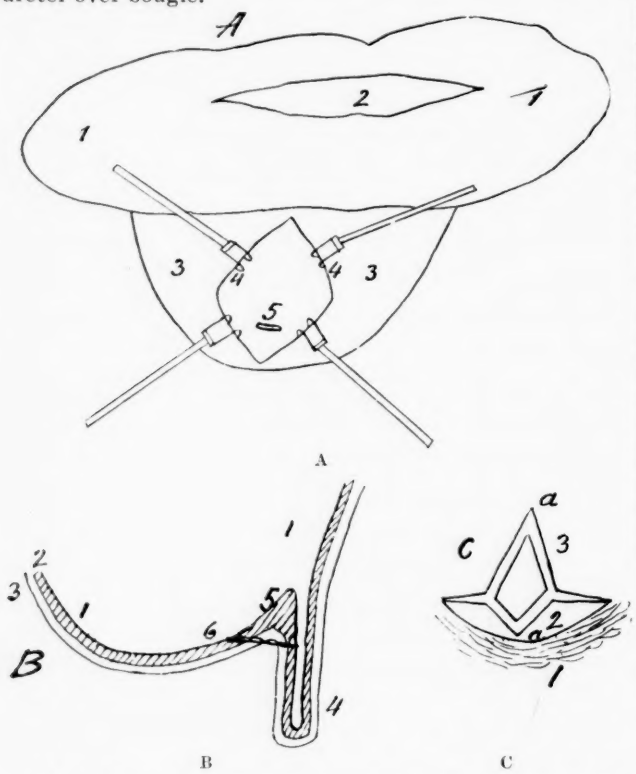

Fig. 1.—CASE 1.—ILLUSTRATING OPERATION FOR VALVE FORMATION.

A.—Kidney and dilated pelvis 1, kidney; 2, opening on its convex surface after nephrotomy; 3, dilated pelvis, 4, with opening on its posterior surface from pelviotomy; 5, opening of the ureter into the pelvis, a small transverse crescent-shaped slit.

B.—Dilated pelvis and ureter, showing valve-formation. 1, pelvis; 2, mucous membrane; 3, muscular and external coat; 4, ureter; 5, valve; 6, line of incision dividing valve.

C.—Valve seen from the pelvis and divided to illustrate the plastic operation. 1, Inner wall of pelvis above the ureteral opening; 2, ureteral opening; 3, the divided valve; a and a' the corners of incision to be united by a suture.

Operation: May 31, at the Emergency Hospital in the presence of the doctors from the Policlinic, and Drs. Waters, Bernauer and Krost, the patient was anesthetized with ether, and placed on the right side with a pillow under the loin. No tumor could be felt. An incision four inches long was made from the angle of the twelfth rib and the extensor dorsi muscle, obliquely downward and forward to the iliac crest above the anterior superior spine. It was necessary to divide the quadratus lumborum for an inch and a half below the rib, in order to gain space for operating. The transversalis fascia was now divided. The retro-peritoneal adipose tissue was scanty. Two tumors could now be felt; one close under the margin of the ribs was recognized as the spleen. Behind and below this could be felt the convex posterior border of the left kidney. During inspiration the spleen was pushed down upon the kidney, but it could be easily replaced. Dissection of the adipose capsule from the kidney was difficult, on account of a plastic perinephritis which had made the capsule tense and adherent to the kidney. The surface of the kidney was not smooth and glistening, but velvety from connective tissue strips. By pressure over the anterior portion of the lumbar region of the abdomen, the kidney was pushed into the wound and the adipose capsule dissected off by forceps and the finger, so as to permit palpation of the kidney between the thumb and index finger. The kidney was rather small, three and one-half inches long, one and one-half inches broad and one and one-half inches thick. Neither hard or soft spots could be felt. Palpation of the pelvis was accomplished by pushing the fingers of the left hand forward toward the hilum, holding the upper half of the kidney meanwhile between the thumb and index finger of the right hand. The pelvis contained no fluid and no stone could be felt. Following down from the pelvis no ureter could be felt, nor could any hard spot or stone be discovered.

A long exploring needle was introduced through the convex surface of the kidney, at a point between the middle and lower thirds, in the direction of the pelvis for a distance of two inches. An empty cavity was entered by the needle, in which no stone could be felt. The needle was next inserted into the upper half of the kidney but neither fluid or stone could be felt.

The pelvis was now opened through the kidney by means of the Paquelin cautery along the needle as a guide, in the middle third of the kidney. The hemorrhage was slight; no fluid escaped. The opening was dilated with forceps so as to permit palpation of the pelvis and calices with the left index finger. The calices were dilated, but still the kidney substance was half an inch thick. The pelvis was a large cavity extending to the lower border of the kidney with a round, smooth, soft surface. No stone could be felt, nor was the ureteral entrance perceptible to the finger. Through a small opening, or over a ridge, the palpating finger could be passed into the upper part of the pelvis. The calices here were dilated but no stone could be felt. Examination with a steel urethral sound gave similar negative results.

In order to find, if possible, a stone in the ureter a small bent metal probe was passed into the pelvis, but the ureteral entrance could not be discovered. The dilated pelvis was now isolated and opened for ocular inspection, to determine the pelvic entrance to the ureter. The lower third of the kidney was lifted forward and drawn into the wound by means of a blunt retractor passed through the wound in the kidney, the posterior surface of the pelvis isolated from the adipose tissue and an incision three-quarters of an inch to an inch in length, made obliquely downward from about one-quarter of an inch from the hilum of the kidney. The wall of the pelvis was two millimeters thick. Neither fluid or urine escaped. The borders of the wound were grasped and held open with forceps. The inner surface of the pelvis was now seen to be normal in color and appearance. At the lower posterior portion of its inner wall was seen a small semicircular opening two lines in length from above downward, and three lines in transverse diameter. The posterior border was convex; the anterior border straight. A metal probe introduced through this opening passed easily down seven or eight inches into the bladder without encountering resistance, either from stricture or stone.

An olive pointed bougie, No. 5 French, which was passed down was tightly grasped by the ureter. By lifting up the pelvis the ureter could now be palpated. The wall was thin and seemed liable to rupture unless great care was exercised. The bougie was removed and on again lifting the pelvis and inspecting the entrance into the ureter it was seen that the ureter came off not from the most dependent portion of the dilated pelvis, but from its posterior half or wall. Thus the anterior straight border of the ureteral entrance formed a valve or fold, resembling the valve in a vein, which would close against the posterior wall of the opening when the pelvis was filled with urine or fluid to a slight or medium degree. A greater degree of dilatation would push away the posterior wall of the pelvis and thus reopen the entrance to the ureter. This accounted for the evacuation of urine containing pus after a period of occlusion of two days duration.

To do away with this valve formation, the following operation was performed on the plan of the Heinecke-Mikulicz operation for stricture of the pylorus (Fig. 1.): An incision two and a half lines in length was made through the mucous membrane into the muscular wall or fold of the pelvis. The terminal points of the incision through the valve were now approximated by a fine silk suture, thereby changing the

former vertical incision into a horizontal line. The entrance into the ureter was by this means made wider and more nearly circular.

A No. 11 French bougie was now passed through the opening in the pelvis down five inches into the ureter, and the upper end brought up through the pelvis and out of the wound in the kidney, to keep the opening into the ureter dilated during healing of the wound.

The incision in the pelvis was united by ten fine silk interrupted sutures passed through the pelvic wall but not including the mucosa. A piece of the cortical substance of the kidney was removed for microscopic examination.

The kidney was now replaced and fixed in normal position by two sutures passed through it which anchored it to the transversalis fascia. The pelvis was drained by a rubber drainage tube half an inch in diameter, inserted along the side of the bougie through the wound in the kidney, into the pelvis. The drainage of the external wound was accomplished by the employment of a gauze drain on anterior surface of the kidney, one on posterior surface of kidney, one down along the ureter and a rubber drainage tube on posterior surface of pelvis, over the wound in the pelvis. The lower part of the abdominal wound was united by silk sutures; the upper half left open for drainage and the usual dressings applied. The operation required two hours; at its close the patient was in good condition; pulse strong, 90; the operation was mechanically easy on account of the lax abdominal walls due to childbearing and the leanness of the patient.

The bougie was removed on the second day. The patient suffered considerable pain for four days; the pain along the course of the ureter persisted for two weeks. Four weeks after the operation the tube was removed and a smaller one introduced which was taken out a week later. The discharge was excessive at first but gradually decreased. Two weeks after operation she could lie on the left side without pain. The patient recovered without fistula and up to the present time has had no return of the hydronephrosis.

A somewhat different method of operating on this valve has been suggested by Küster,[13] but has not yet been tried. He reports a case in which he divided the valve longitudinally as I did. He proposed to freshen each flap and unite it by sutures to the freshened inner wall of the sac. Küster was not able to carry out this plan because he found in addition to the valve, a stricture in the ureter two centimeters below the pelvis. This condition caused him to resect the upper three centimeters of the ureter and unite the upper end of the distal portion to the pelvis by a plastic operation to which I shall refer later.

It appears to me that my method of operating upon the valve is simpler than Küster's; his requires at least two sutures, mine only one; the method, moreover, proved efficient in my case just reported.

STRICTURES IN THE UPPER PORTION OF THE URETER.

It has been seen, in the description of valve formation, that stricture often forms in the portion of the ureter located in the wall of the dilated pelvis; but this stricture is treated by the operation for valve formation—as described above. Independent strictures below the pelvis require different treatment. If such strictures are single and accessible they can be operated upon with a view to reëstablishing the continuity of the canal.

Outside of observations at the postmortem table, little attention has been called to the question of strictures of the ureter, because in the cases of hydro- and pyonephrosis operated upon, the kidney has been opened or extirpated, and no attention has been paid to the ureter. From the postmortem table we know that multiple strictures can be found as a result of chronic inflammation of the canal, as in the instance depicted by Hallé[14] mentioned by Tuffier, in which not less than three strictures were found, the canal between the strictures being dilated. It is doubtful if cases of this kind would be suitable for operation.

As a result of traumatism, limited strictures have been seen to be formed, as in the cases of Pye-Smith[15] and Sollier.[16] Pye-Smith reports the following case of stricture of the ureter and dilatation of the kidney, apparently of traumatic origin:

PYE-SMITH'S CASE.

Aug. 16, 1871. Guy's Hospital. Male, 24; farrier. Never had stricture. Frequently been kicked in abdomen. Two years before kicked on left side "under the short ribs" and passed blood with urine several days. In bed only three days. August 7, diarrhea, swelling of abdomen, vomiting, pain in abdomen. No difficulty in passing water. Examination: Large tumor occupying left half of abdomen, smooth, deep fluctuation. Urine contained trace of albumen. Diagnosis: Probable vascular fibro-cystic growth. August 22. Tapped, and six and one-half pints of a reddish fluid containing pus and blood corpuscles flowed out. Tumor gradually filled and was again tapped. Patient improved and went home in October. He had return of the diarrhea and died October 14. Autopsy October 17: Renal tumor firmly adherent to surroundings. Right kidney swollen, early parenchymatous nephritis. Bladder normal, ureter dilated one and one-half inches, then contracted so as not to admit smallest probe. No impacted calculus; no sign of recent inflammation. Tumor; little renal tissue remained. Organ dilated into a series of communicating cysts containing yellow puriform fluid; scarcely any blood. No trace of calculus; no cheesy material. No abnormal tissue. In one of the cavities vegetable fibers, apple core and fragment of clove were found; therefore opening must have existed during life with communication with adherent bowel. Disease probably traumatic. Ureter probably injured. During two years following, canal was gradually contracting and forming stricture. Consequently, pelvis of kidney gradually expanded. Adhesion to colon determined diarrhea and suppuration from which patient died.

Sollier's case was one of traumatic stricture of the ureter in a man of 45 who, in 1870, sustained a traumatism by a kick from a horse in the left hypochondrium. The injury was followed by pain in the left side gradually increasing for nine years, when symptoms of nephritis appeared and the patient died from uremia. At the autopsy it was found that the left kidney had been transformed into a number of cavities the size of nuts. The calices, pelvis and upper portion of ureter were dilated. In the middle portion of the ureter was found a "cicatricial stenosis." Hypertrophy of the heart was found which had already been diagnosed during the patient's life.

Little is also known as to the frequency of strictures, but it may possibly be concluded from the frequency of permanent urinary fistulas following nephrotomy that they are not of infrequent occurrence. Tuffier states that fistulas followed nephrotomy in 45 per cent. of the cases collected, and we are forced to believe that the permanency of the fistula is caused by imperviousness of the ureter either from valve-formation or from stricture. How often this is caused by a stone lodged in the canal and how often by a stricture without stone we will not know until the ureter has been investigated by probing from above in a large number of nephrotomies. From the statistics collected by Tuffier, which show that nephrotomy for calculous pyelitis was followed by 34 per cent of fistulas in 114 collected cases, and that nephrotomy for non-calculous pyelitis was followed by 57 per cent. of fistulas, we can not draw any certain conclusions as to the frequency of stricture in non-calculous pyelitis as compared with the frequency of stones in the ureter; but it is likely that strictures are common.

As to the frequency with which strictures occur in different parts of the ureter, we have a statement from Tuffier to the effect that in twenty-nine instances of congenital hydronephrosis, a stricture was found in the upper end of the ureter in fifteen cases, and at

the lower end in fourteen. In Sollier's case of traumatic stricture, it was located in the middle portion of the ureter.

The question of gaining access to different portions of the ureter in order to overcome obstruction, has been solved as far as the removal of stones is concerned, by a number of operations already on record as follows: The vesical end of the ureter has been reached from the bladder by Emmet, Richmond and others; from the vagina, by Emmet and Cabot.

The pelvic portion of the ureter has been reached by extra-peritoneal lumbar incision, and the stones removed either by pushing them up into the pelvis, and pyelotomy in four cases (Tuffier), or by longitudinal incision of the ureter, in four cases (Tuffier), and in my case published in *Chicago Medical Recorder*.

From the middle portion of the ureter, stones have been removed in four cases (Tuffier,) by longitudinal ureterotomy by the prolonged lumbar incision. There is no difficulty in gaining access to the upper two-thirds or three-fourths of the ureter by the oblique lumbar incision. It is different with the lower third or fourth of the ureter, which is located deep down in the pelvis, and is even held by La Dentu to be inaccessible. But Cabot has justly pointed out that this portion of the ureter is also accessible without opening into the peritoneum by means of the sacral operation of Kraske, with removal of part of the sacrum, or temporary resection of the latter.

As far as strictures are concerned, there have as yet been made only two attempts at operating, namely, by Küster and myself, and a successful result in both cases was reached by a somewhat different method. Both were strictures in the upper part of the ureter close to the pelvis of the kidney.

Küster resorted to resection of the narrow portion of the ureter and united the distal portion to the pelvis of the kidney. His most remarkable and interesting case was as follows:

The patient was a boy 11 years of age. As a baby and until his fifth year he was sickly, but afterwards was healthy. In June, 1889, spontaneous enlargement of the abdomen was noticed accompanied by pain. This was diagnosed as left hydronephrosis. The urine was clear and sufficient in quantity, indicating open hydronephrosis. On June 23, Professor Braun made a lumbar nephrotomy which was followed by vesical anuria and the patient left the hospital with a fistula.

On May 25, 1891, the boy was seen by Küster. The fistula was permanent and little or no urine came from the bladder. The fistula in the lumbar region was dilated and digital exploration of the pelvis made. Catheterization of the ureter from the dilated pelvis could not be effected. The operation was followed by septic pyelitis.

July 14, 1891, it was decided to attempt to make the ureter patent, which was accomplished by Küster in the following manner: A lumbar extra-peritoneal incision was first made into the sac, but the ureter could not be found. The lower end of the sac, the dilated pelvis, was then incised, on the upper border of which was seen a layer of kidney substance the thickness of a thumb. The ureter could now be seen running several centimeters in or upon the posterior wall of the sac, and terminating in a slit in the pelvis. It was then intended to divide the pelvic wall of the ureter by pushing a probe-pointed knife down into the ureter from the pelvis to a point close to its exit from the sac to spread out the divided walls and unite them to the wall of the sac, thus making a funnel-shaped opening into the ureter. (See Fig. 2); but on attempting to introduce a fine probe into the ureter, a stricture was encountered two centimeters below the pelvis. The ureter was therefore divided from above downward, as far as the stricture, through which a fine probe could now be passed.

As cure seemed impossible without removing the stricture, the ureter was transversely divided below the stricture and at the entrance to the sac. The ureter was now united to the pelvis by dividing the upper end of the ureter, unfolding the divided end, suturing it to the opening into the sac, and closing the remainder of the wound in the pelvis by catgut sutures.

The next day some bloody urine escaped into the bladder, but ordinarily the urine passed out through the lumbar fistula. From this time more and more urine passed into the bladder, until four months after the operation as much as 100 cubic centimeters passed in the twenty-four hours. The pelvis was now washed out for pyuria with one-fourth of 1 per cent. solution of nitrate of silver; this was followed by local and general improvement.

Nov. 6, 1891, the fistula was closed by curetting, dilating and closing the canal by step sutures. In the first twenty-four hours after the operation the patient passed 1,300 cubic centimeters of bloody urine from the bladder. He recovered, but with a lumbar hernia which had to be held in place with a bandage; the fistula remained closed. The boy is able to work and has excellent health. The urine contains a few pus corpuscles and a small quantity of albumen.

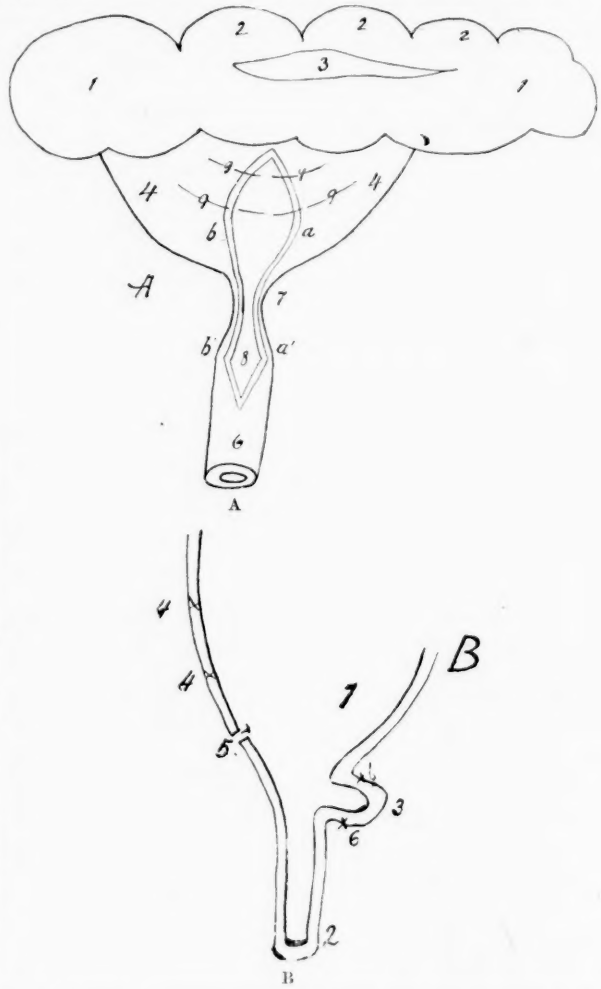

Fig. 2. CASE 2. ILLUSTRATING OPERATION FOR STRICTURE OF URETER.

A.—Sacculated kidney, dilated pelvis, ureter with stricture at its upper end. 1, kidney; 2, sacs corresponding to dilated calices; 3, nephrotomy; 4, dilated pelvis; 5, opening in posterior surface of pelvis-pelviotomy wound; 6, ureter below stricture; 7, stricture in upper end of ureter; 8, opening in ureter below stricture, extending up through the stricture into the pelvis; 9, sutures closing the upper half of the wound in the pelvis; a-a' and b-b', points of incision in ureter and pelvis to be united by sutures after folding the ureter upon itself at the place of stricture.

B.—Pelvis and ureter after union by sutures. 1, pelvis; 2, ureter; 3, fold of ureter at place of stricture; 4, sutures of wound in pelvis; 5, place of sutures between points a-a' and b-b'; 6, 6, additional sutures, as many as needed, to close borders of the fold formed by approximations of a to a' and b to b'.

Plastic operation on the stricture without resection of the ureter was practiced by me in the following case:

Case 2.—Synopsis: Traumatic stricture of ureter close to entrance into pelvis of the kidney; intermittent pyonephi-

rosis of four years' standing; increased frequency of attacks; nephrotomy; no stone found in sacculated kidney; ureteral entrance could neither be found through wound in kidney nor through incised pelvis; longitudinal ureterotomy revealed stricture at upper end of ureter; longitudinal division of stricture and plastic operation on ureter; recovery without fistula in six weeks.

W. B., a farmer 47 years of age came under my care Nov. 12, 1892. Father died as a result of accident. Mother dead; cause unknown; one brother died of phthisis. Patient's health good up to age of 13. The present trouble dates back thirty-four years, when as a boy of 13, in jumping from a horse to the ground, on account of miscalculation of distance he sustained a violent jerk, his feet not having touched the ground while his hands still retained hold of the hames. This injury was immediately followed by a sharp constant pain in the left side, which was mitigated by blistering, but he was obliged to remain in bed for a month. He suffered no inconvenience with the exception of slight soreness in the region of the left kidney, increased by hard work, until ten years later when, after over-exertion, he had an attack of sharp pain in the left side; at this time he was in bed about a week. One year later he had a third attack which followed free indulgence in liquor. This attack was attended by pain, soreness and obstinate constipation. For the next ten or fifteen years he had four or five attacks a year, lasting from two to three days and always after indulgence in liquor. During the last six years the attacks have apparently been caused by over-exertion, with the exception of one attack a year ago for which no cause could be assigned. The last attack occurred Oct. 22, 1892. It was no more violent than previous attacks but was of longer duration.

Examination: Nov. 12, 1892. Patient well nourished. In left hypochondrium could be found a tumor immovable, hard and not nodular, which extended two inches below the ribs and to within three inches of the umbilicus. Temperature 101 degrees; urine contained a little pus. Diagnosis: Nephrolithiasis in the pelvis or infundibulum, or pyonephrosis from stone or obstruction in the ureter.

November 26. For the past week there has been more pus in the urine, indicating that the contents of the pyonephrosis has been evacuated through the ureter. Examination in narcosis showed that the tumor had disappeared. Operation at the German Hospital. The patient was anesthetized with ether and placed on the right side with a pillow under the loin. An incision was made from the angle of the twelfth rib six inches downward and forward, to within one inch above and anterior to the crest of the ilium. The muscles were strong. After division of the transversalis fascia and removal of a layer of adipose tissue, the adipose capsule of the kidney was exposed, which was so adherent to the surface of the kidney that when it was removed the fibrous capsule was stripped off also. The exposed surface of the kidney was not shining but was red and velvety. It was nodulated, each nodule forming a flat prominence, about two centimeters in diameter. Each prominence was compressible and resembled a dilated calyx. The kidney was of normal size, about nine centimeters long, four centimeters broad and three centimeters thick. In one place a cyst the size of a pea with clear yellowish contents was seen. After excision of a piece of the kidney substance for microscopic examination, the dilated cavity of pelvis and calices was opened, and a jet of urine tinged with pus came out over the wound. The incision along the convex border of the kidney was enlarged by the Paquelin cautery.

Digital exploration revealed that the globular protuberances were dilated calices, which communicated with the pelvis, forming a common cavity. Some of the calices had openings large enough to admit the tip of the finger; others had openings which would admit a No. 10 urethral sound. No small abscesses could be seen on the surface of the kidney or in the incised substance. The protuberances now appeared to be collapsed, but a reasonable amount of kidney substance appeared to be present, especially in the lower part. The index finger was passed through the wound in the kidney down into the pelvis which was seven centimeters long and four centimeters deep. The wall was smooth and there was no stone or gravel. Neither by the palpating finger nor by the sound or probe could anything be discovered resembling an entrance to the ureter.

The kidney was therefore lifted up over the border of the twelfth rib, so that its anterior surface was directed upward and toward the median line, and its posterior surface backward and downward, thus exposing the posterior surface of the dilated ureteral half of the pelvis. A longitudinal incision, one inch long, was made in the pelvis and the edges held apart with retractors. The pelvic mucosa looked red and inflamed, but no ureteral entrance could be seen or felt.

The external wound was now prolonged downward for an inch and a half, to within an inch of the anterior superior spine of the ilium, to secure more operating space. The ureter could now be seen as a string or band, not dilated. Its upper end for half an inch was imbedded in cicatricial tissue. A longitudinal incision one centimeter long was made in the ureter half or three-quarters of an inch below the pelvic opening. A small metal probe introduced into the ureter through this incision passed downward freely for six inches. In passing it upward, however, a stricture was found just below the point of entrance of the ureter into the pelvis. The ureter was adherent to the surrounding adipose tissue at this point. The adhesions were separated by the handle of the scalpel and the stricture opened by a longitudinal incision on the probe as a guide. The opened stricture was seen to be one centimeter long. The remainder of the ureter was examined by a French bougie, which would pass down four or five inches, but would then be caught by the ureter. There was no stricture, but a diffuse atrophic narrowing of the ureter. A fine probe or a small bougie could, however, be passed without difficulty into the bladder.

The patency of the ureter was reëstablished by uniting the wall of the ureter below the stricture to the pelvic wall, leaving the stricture as a loop as shown in Fig. 3. This procedure was similar to the Heinecke-Mikulicz operation upon the pylorus.

The upper part of the wound in the pelvis was closed by sutures. No bougie was left in the ureter. The wound was drained by a large tube passed into the wound in the kidney three inches upward to the upper corner of the kidney. A smaller drain was passed down to the pelvis and ureter. Gauze strips were packed around the anterior and posterior surfaces of the kidney, and three inches down along the ureter. The divided muscles of the abdominal wall were then united, with the exception of the lower three inches, which was packed with gauze. The external wound was united by sutures and dressed in the usual way. The operation occupied two hours. The patient was weak at its close, pulse 130; much pain along course of ureter. The next day he passed naturally water containing no blood. The wound was dressed daily, and the dressings were found to be saturated with five ounces of urine. The amount was determined by the difference in weight of the dressings on application and after removal. The patient steadily improved. The pain decreased, and the amount of urine in the dressings became progressively less. November 29 to 31 blood was found in the urine, which showed that the ureter was patent from the third day after the operation. December 19, half the tube was removed and a day later the remainder was taken out.

Jan. 5, 1893, the wound was closed. The patient was well and strong, suffered no pain and could walk around all day. No tumor could be made out. Pressure in renal region was painless. The urine at this time was normal in quantity, forty-six ounces, and upon microscopic examination of the sediment a few pus cells could be seen. No trace of albumen could be found in the urine. The patient thinks he has gained flesh and is much better than before the operation.

November 14 while the tumor was present and the temperature high, the quantity of urine for the twenty-four hours was eighteen ounces. After the disappearance of the tumor on November 17 and 18, the temperature fell to normal, and the amount of urine increased to thirty-four ounces on November 19, and to thirty-two ounces on November 20. On the evening of the day of operation the patient passed eighteen ounces of urine; on November 27, twenty-six ounces; on November 28, thirty-two ounces, and from this time on the amount of urine passed averaged thirty ounces a day.

Reunion of a transversely divided ureter first studied experimentally on dogs by Tuffier[17] and others, was not successful until the method of invaginating the upper into the lower portion was devised by Poggi[18] and Van Hook. It was first practiced successfully in man by Kelly who used Van Hook's method. Poggi found that by invaginating the upper end into the lower, union would take place. He divided both ureters in dogs, dilated the lower end

with a forceps, invaginated the upper end into the lower and united with sutures. When the animals were killed fifteen days and three and one-half months later, respectively, he found union without stenosis at the point of operation.

Van Hook [19] in a preliminary contribution has also succeeded in reuniting the completely divided ureter by a different method which might be termed lateral implantation of the upper into the lower end after the closure of the end of the latter. In a very elaborate paper upon the surgery of the ureter [20] he gives the reasons why his method of lateral implantation is preferable to the simple invagination of Poggi. He believes that the ureter can sustain resection involving a considerable amount of tissue, since ureters measuring ten inches while in situ will easily measure twelve to fourteen inches when removed, and he further remarks that traction on the divided ends, is probably admissible to a very considerable extent.

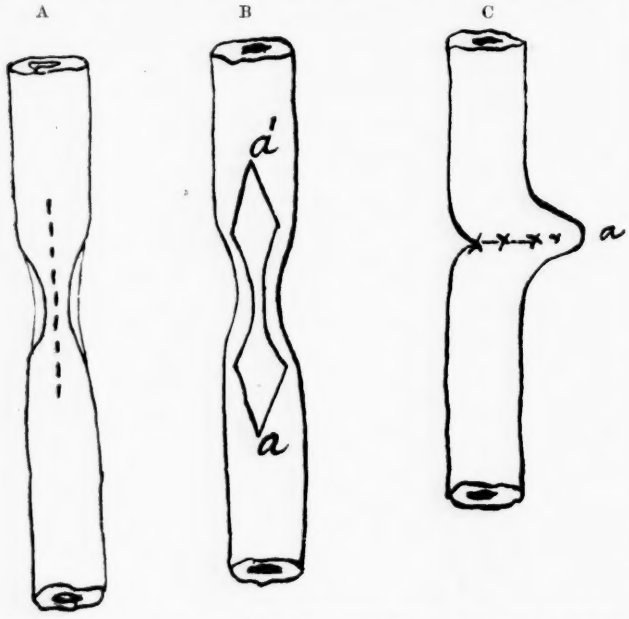

Fig. 3.—MY PLAN OF OPERATING FOR URETERAL STRICTURE ON EXTRA-PERITONEAL SURFACE OF URETER.

A.—Ureter showing stricture and line of incision.
B.—Opening through the stricture extending into the proximal and distal portion of the ureter. The extreme ends of the incision a and a' to be united.
C.—Ureter alter suturing; a, the bend at the site of the stricture.

The first reunion of a completely divided ureter by uretero-ureteral anastomosis, or uretero-ureterostomy in the human subject has recently been reported by Kelly.[21] Eight years ago his attention was called to the danger of cutting a ureter during operation for an abdominal tumor which had displaced it. He now reports:

Mulatto, 25 years of age, who had a large uterine myoma the uterus filled true and false pelvis and extended above umbilicus. Hysteromyomectomy was performed May 1, 1892. Ureter ligated and cut supposing it to be an engorged vein. Ureter was four times its normal size by reason of pressure from the tumor (hydro-ureter). On removal of upper ligature twenty cubic centimeters of clear urine escaped. Van Hook's plan tried of tying lower end of divided ureter, making slit in ureter below ligature and invaginating upper into lower end by means of silk traction sutures. Edges also sutured to intussuscepted portion by ten fine silk rectangular sutures passed through outer coat only. Gauze laid over anastomosed end, and brought out at lower angle of abdominal wound to insure drainage. No urinary odor about dressings. Passed water second day. Discharged in six weeks. After Kelly's successful operation Bloodgood made an experiment upon the dog. He performed anastomosis of right ureter after section. Kidney and ureter were removed two and one-half months later. The kidney was found normal, ureter not dilated, caliber and mucous membrane restored without stricture.

CONCLUSIONS.

1. Exploration of the ureter as to its permeability should be done from the renal wound by a long flexible silver probe (a uterine probe) or an elastic bougie, either olive pointed or not. If the bougie passes into the bladder, the examination is at an end. The size of bougie that will pass through a healthy ureter is from 9 to 12 French scale.

2. If the pelvic orifice of the ureter can not be found from the renal wound, it should be sought for by opening the pelvis, pyelotomy, or by incising the ureter, ureterotomy.

3. A longitudinal incision, half an inch to an inch long, in the posterior wall of the pelvis can be made while the kidney is lifted upward against the twelfth rib. This procedure is easy if the pelvis is dilated, but may be impossible if the pelvis is of normal size.

4. A stricture in the ureter, if not too extensive, can be treated by a plastic operation on the plan of the Heinecke-Mikulicz operation for stenosis of the pylorus; namely, longitudinal division of the stricture and transverse union of the longitudinal wound. (Fig. 3). This method of operating for ureteral stricture seems to me preferable to resection of the strictured part of the ureter (Küster's operation) for the following reason: It is a more economical operation and preferable when the elongation of the ureter is not sufficient to permit the two cut ends of the ureter, after excision of the stricture, not only to come in contact but even to permit of closure and invagination without stretching.

5. Resection of the upper end of the ureter and implantation of the distal end into the pelvis has been performed in an important and interesting case by Küster, and the result was a brilliant success. His method was to split and unfold the end of the ureter, and to implant it into the opened pelvis, to which it was united with sutures.

6. In a similar case of stricture in the upper end of the ureter, especially if the ureter were not elongated or the kidney movable, I should prefer the plastic operation already described, as it is easier of technique, and as it proved successful in my case of traumatic stricture in the ureter below the pelvic orifice.

7. The ureter is accessible through an extra-peritoneal incision, a continuation of the oblique incision for lumbar nephrotomy, from the twelfth rib down along and one inch anterior to the ilium and along Poupart's ligament to about its middle. This incision gives access to the upper three-fourths of the ureter and down to within an inch and a half or two inches above the bladder.

8. The vesical and lower pelvic portions of the ureter may be reached, as Cabot of Boston, has pointed out, by means of the sacral operation, or Kraske's method modified by osteoplastic, temporary resection of the os sacrum. In woman, the vesical portion of the ureter is accessible through the vagina.

9. The vesical orifice of the ureter may be reached from within the bladder by supra-pubic cystotomy in man, or by dilatation of the urethra, or supra-pubic or vaginal cystotomy in woman.

In conclusion, I wish to cite literally the remarks made by Küster at the conclusion of his communication to the German Surgical Congress, because I fully

agree with Küster and think that his remarks apply well to my suggestions made above. Küster says:

"Gentlemen: When I bring this case before you, it is not to present to you a curious operation or a curiosity in the line of operating. The value of the observation appears to me to lie in the fact that it shows a method by which it may be possible to avoid the mutilating and dangerous operation of nephrectomy in cases of pyonephrosis where and when we do not know that the other kidney is perfectly healthy."

I would add—and a means to save or avoid some instances of permanent fistulas following nephrotomy for pyo- or hydronephrosis.

NOTE:—When I commenced to investigate the question of stenosis of the ureter and its possible operative treatment, I did not know that Küster had commenced work in the same direction. The first publication of Küster's case which reached me was his report before the Twenty-first German Surgical Congress, June 8 to 11, 1892, which appeared in the *Centralblatt für Gesammte Medicin*, for Aug. 13, 1892.

My first operation for stenosis was performed at a clinic and described in a clinical lecture given on May 31, 1892, at the Emergency Hospital, Chicago, for the Chicago Policlinic.

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THE IDEAL KNEE SPLINT.

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The ideal splint for treatment of disease at the knee-joint is one that gives 100 per cent. of immobilization and, at the same time, protects the joint from the traumatism incident to locomotion.

The early form of the Thomas knee splint, the one with the patten bottom, which is pretty generally used in this country, was markedly in advance of all the short splints, and of the splints making traction from adhesive plasters applied from the knee upward and downward; but the splint lacked somewhat in power to immobilize, and on that account confined the patient to bed unnecessarily long. Besides this, a high patten was required for the opposite leg and the apparatus became a clumsy one.

The form of splint to which I wish to call attention is not new; it was used to the exclusion of the "patten" splint by Mr. Thomas for at least four years prior to his death, and has been exclusively used by Mr. Robert Jones and myself since that time. It

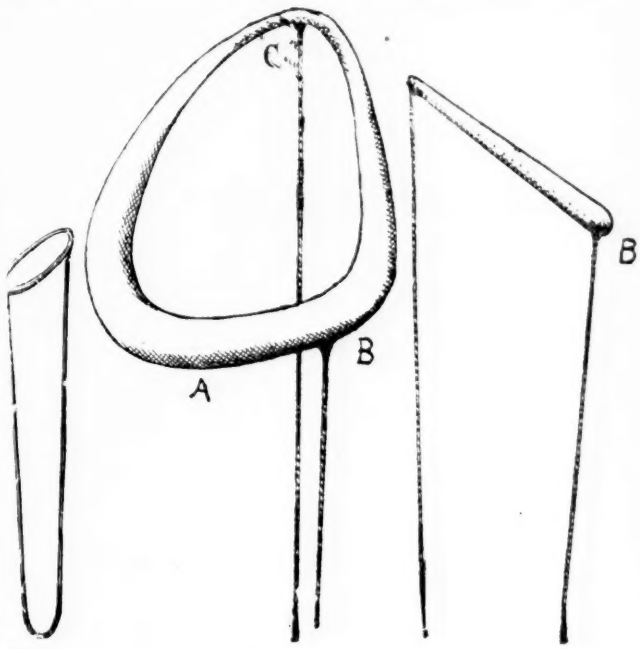

Fig. 1. Fig. 2. Fig. 3.

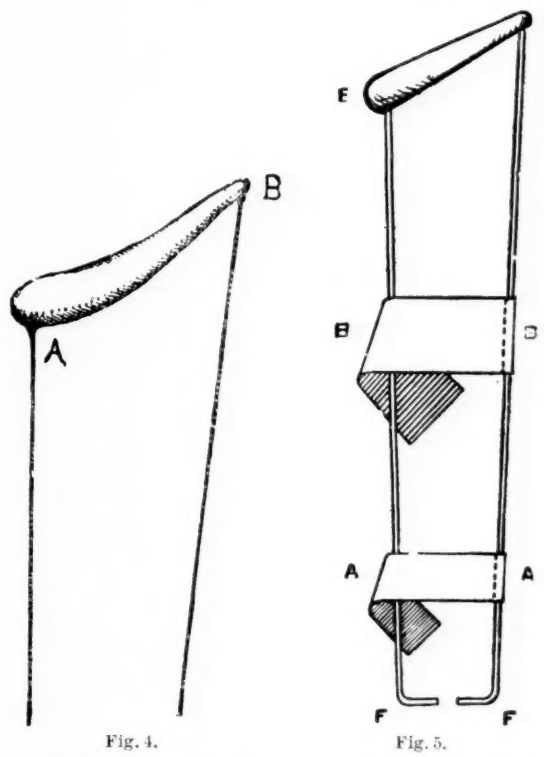

Fig. 4. Fig. 5.

was called by Mr. Thomas the "Caliper" splint, and may be readily made without the help of the instrument maker from the "bed" splint.

The bed splint consists of a ring of iron wire to which is welded a long loop of the same wire, Fig. 1. The ring, in shape, is an irregular ovoid, flattened in front, and drawn out at the posterior and

inner portion so that when padded it shall fit the upper circumference of the thigh, Fig. 2, and as here observed, the inner wire of the loop B, is joined more anteriorly than the outer wire C. The ring slopes from without inward, and from backward in

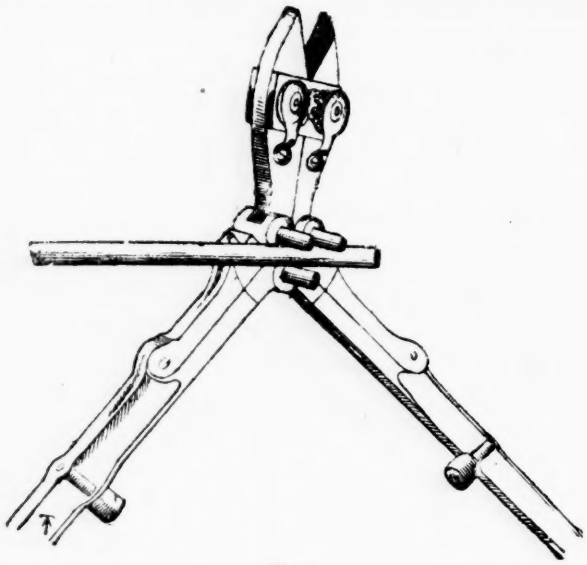

Fig. 6.

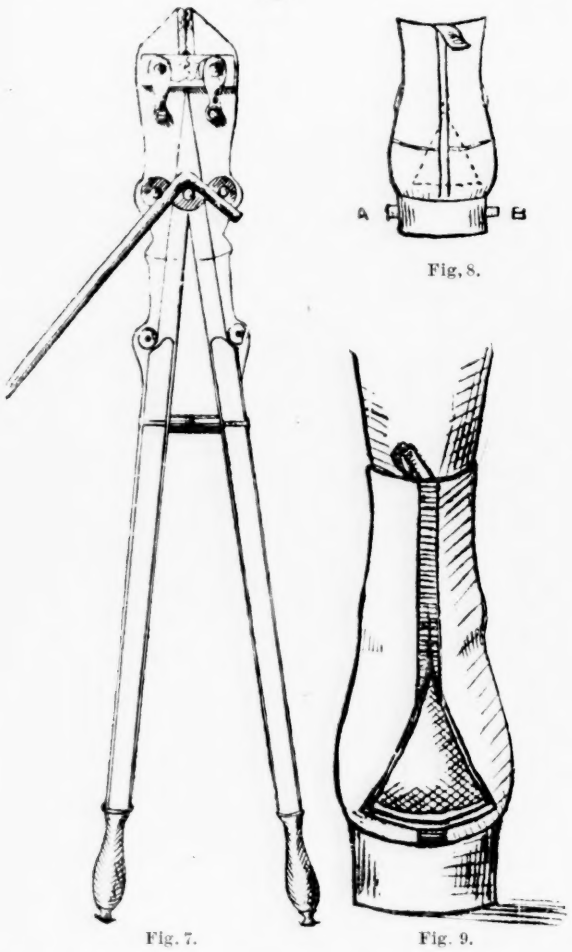

Fig. 7.

Fig. 8.

Fig. 9.

such a way that the point A upon which rests the tuberosity of the ischium is the lowest part of the ring. Fig. 3 shows front view and Fig. 4 the rear view. The angle formed by the lateral plane ring and the inner bar is about 135 degrees, and the anterior angle formed by the antero-posterior plane of the ring and the inner bar is about 145 degrees. The wire used depends upon the weight of the patient and is from three-sixteenths to three-eighths of an inch. In making the ring the ends should be joined by welding, and the side bars of the long loop are joined to the ring in the same manner. Few surgical instrument makers are good blacksmiths and therefore find it easier to braze than to weld, but a brazed joint breaks on bending, while a welded joint holds fast. The lower end of the long loop is dimpled somewhat to receive and retain the strap from the adhesive plasters. The ring is padded with boiler felting to the thickness of about half an inch in its outer portion and from an inch to an inch and a half in thickness at the inner posterior portion upon which the tuberosity of the ischium is to rest, and then covered with basil leather, tan sheepskin, put on wet, and sewed after the manner of the harness

Fig. 10.

Fig. 11.

Fig. 12.

maker along the lower and outer border of the ring, i. e., where the seam will not chafe the patient. Two strips, from three to four inches wide, of the same leather, are sewed to one of the side bars, the other end being left free and of sufficient length to be drawn across to the opposite bar, and when sewed there, forms a support to the back of the limb when the splint is applied; one of these strips is to be back of the knee and the other back of the ankle.

The splint is applied by slipping the ring on over the leg and pushing it well up against the tuberosity of the ischium. If fixative traction is to be used, strips of long adhesive plaster in width about one-fourth of the circumference of the leg, and in length equal to the distance from the knee to the ankle, to the lower ends of which pieces of strong tape, webbing, or muslin bandage, have been sewed, are applied to the outer and inner surfaces of the leg; if these pieces of adhesive plaster are supplied with

narrow, oblique, lateral strips for winding around the leg, they will remain much longer attached to the skin. The plasters applied are held in place by an ordinary bandage. The surgeon now grasps the patient's foot, and pulls steadily downward, at the same time pushing the splint upward, and having straightened the limb as much as the patient will

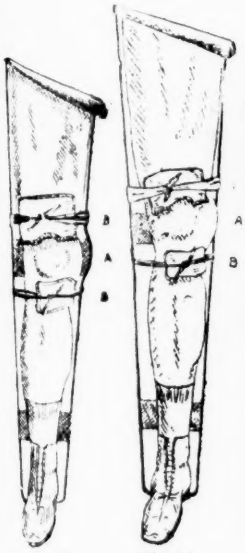

Fig. 13.

Fig. 14.

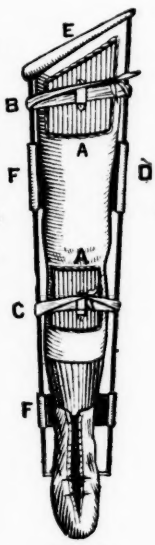

Fig. 15.

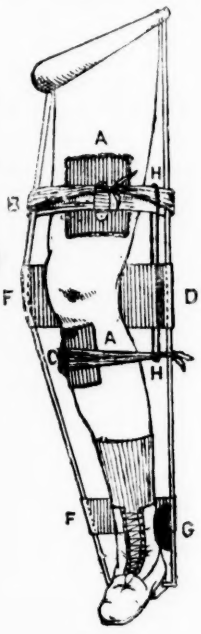

Fig. 16.

one side bar and then the other; or a thick pad may be placed across the lower end of the thigh, well down upon the patella, and backward pressure made by a strong strip of muslin bandage, passed across

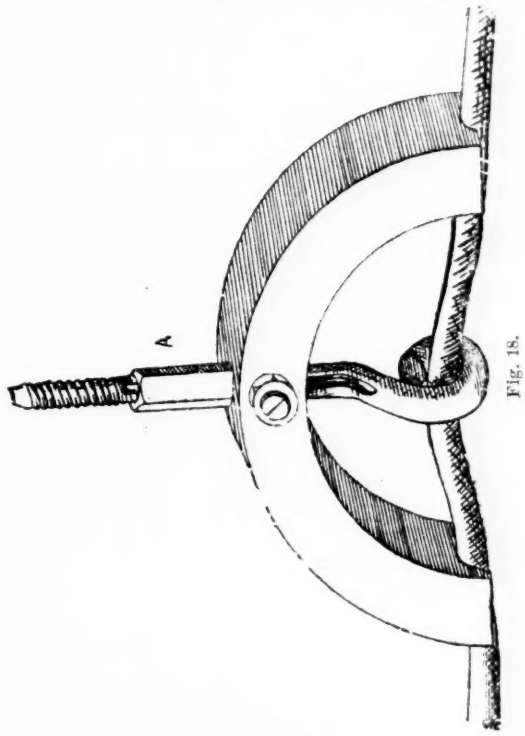

Fig. 18.

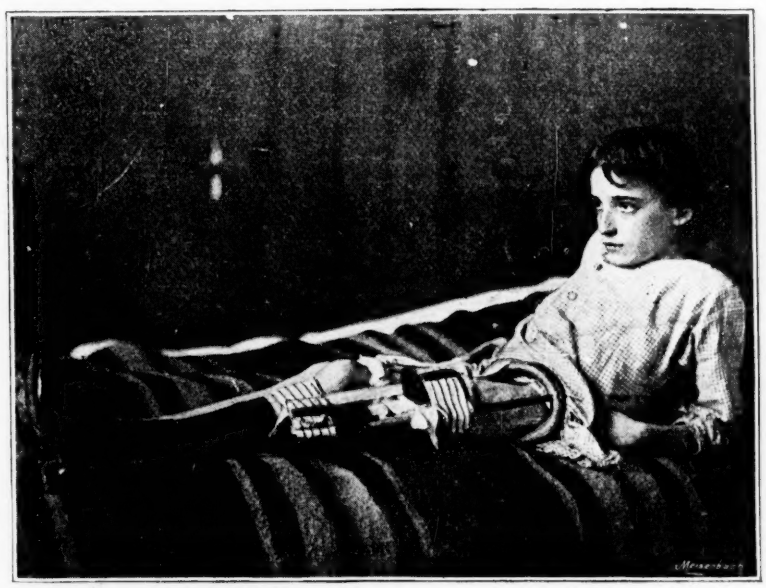

Fig. 17.

tolerate, ties the tape terminations of the adhesive plasters at the dimple, or upward bend, at the lower end of the splint. The lower leather cross strip is now placed back of the ankle, drawn snugly across and sewed fast. The other leather strip is placed back of the knee, or back of some part of the thigh if the knee is too greatly flexed to rest upon it, and it is drawn across to the opposite bar and sewed there. The knee is now pressed backward, straightening it as much as the patient will tolerate, and held there by a roller bandage carried back and forth across the front of the limb, and around first from side to side and somewhat downward, and tied to each side bar by a half-hitch, and then carried across the pad and tied. After this, the traction tapes at the bottom are again tightened. The limb is left thus, if everything remains in place, for two or three days, when it can again be made straighter and the fastenings tighter. In this way, the limb is straightened. If the limb is to be straightened at once under an anesthetic, it is better to apply at once after the straightening, the caliper splint, which will now be described.

The caliper splint is made from the bed splint by

cutting off the lower end of the loop and bending an inch or more of each side bar inward at a right angle. Fig. 5. The bed splint is applied and pushed well upon the straightened limb, a point is marked on each side bar an inch below the sole of the foot, and an inch or an inch and a half below this; the side bars are cut off and the bend is made at the point marked. Figs. 6 and 7 show the tool used for cutting off these bars, and the process of bending them. A shoe is cut at the heel as shown at Fig. 8 or Fig. 9; a hole is bored through the heel, Fig. 10, line AB, or a slot made by a second hole, line CD, Fig. 11, and a tube inserted, Figs. 8 and 12, into the hole or tube the bent ends of the side bars are passed, the leather

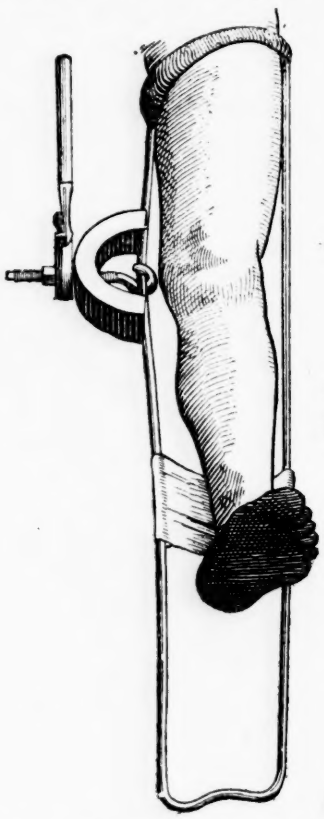

Fig. 19.

strips drawn fast and sewed, and the limb tied or bandaged in place, as shown in Figs. 13, 14, 15, 16, 17. If the knee is swollen so that the inner bar presses against it, this bar is drawn outward with wrenches, or the tool, Figs. 18 and 19, employed. When a joint has been straightened under an anesthetic, it should be left in the splint, without change of shoe, stocking or bandages until all pain and tenderness have passed off. In a word, the joint has been more or less sprained by the maneuver, and must be treated with all the consideration which a sprain demands.

The deformity corrected, the patient should be kept off his feet until the muscular spasm which tends to deformity has subsided; then he may be allowed to walk about. If, for any reason, the patient has to be gotten up before this time, he should use crutches.

Is Fond of Press Clinics.—Superintendent Marks of the City Hospital, St. Louis, according to the veracious *Chronicle* of that city, has decided to admit reporters of the daily papers to the clinics of that institution.

STENOSIS OF THE LARYNX AND TRACHEA.

(Reported from the Transactions of the Chicago Medical Society.)

BY E. FLETCHER INGALS, A.M., M.D.

PROFESSOR OF LARYNGOLOGY AND DISEASES OF THE CHEST AT RUSH MEDICAL COLLEGE, ETC.

Dr. Ingals presented the history of a young woman, 23 years of age, who came under his care for stenosis of the larynx and trachea:

Five years previously she had been on the point of suffocation from the pressure of a large goitre, when tracheotomy had been done by Dr. Senn and artificial respiration established, which had saved her life. Dr. Senn had at that time removed a wedge-shaped piece of the thyroid and opened the trachea with the thermo-cautery. He had then introduced as a tracheotomy tube, a new device of his own, which possessed some advantages over the ordinary tubes.

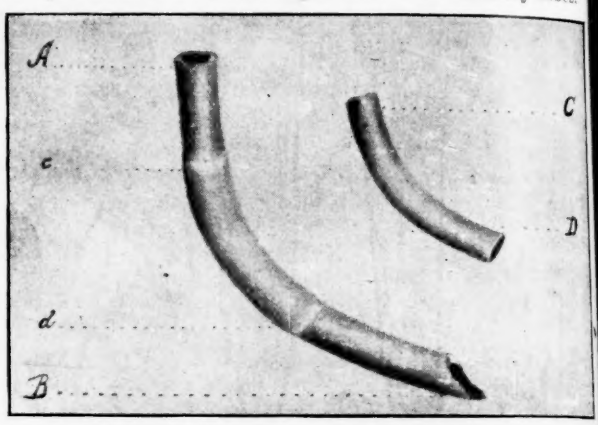

Fig. 1.—Half size. Senn's tracheotomy tube.
A B—Rubber trachea tube. C D—Silver tube to be worn inside the rubber tube A B, as shown at c d.

This tube, represented in Fig. 1, consists of a curved silver tube about one-quarter of an inch in diameter and two and one-half inches in length, which was placed inside a rubber tube of the same caliber and about five inches in length, but which might have been either longer or shorter, according to the indications in the special case. The silver tube maintained the proper curve, and the whole was easily retained in the trachea. This tube, while in position, was cleansed by the patient by means of a feather, or after it had been worn for a few weeks it could be removed and cleansed, the patient having a similar tube to insert immediately after its removal to prevent contraction of the wound and trachea. The enlargement of the thyroid had practically all disappeared.

The patient had been referred to Dr. Ingals during the past summer by Prof. Senn, whom she had consulted at the Presbyterian Hospital, on account of inability to speak, or to breathe through the mouth. Dr. Ingals found complete closure of the lower portion of the larynx between the cords and the tracheal wound. Finding a cicatricial tissue so firm that it could not be torn, he passed a forceps down upon it from the mouth and cut down to the instrument from the external wound. The cicatricial tissue was very tough and about six millimeters in thickness. It was cut away upon the sides with the punch forceps shown in Fig. 2, which had

Fig. 2.—Ingals' punch forceps (half size).

been devised for this special purpose. The wound was then kept open by a rubber tube similar in size to that which had been used for the trachea. This tube was split down about three-quarters of an inch at one end, and the two sides were sewed together at the extremity, the edges of the cut being pared off so as to make an opening through which the tracheal tube could be passed. This laryngeal rubber tube

was passed upward, through the opening in the trachea, to the larynx, and the tracheal tube was passed through the place prepared for it in the end of the laryngeal tube.

Subsequently, after several experimental tubes had been made the laryngo-tracheal tubes, shown in Fig. 3 were constructed. Although somewhat larger in caliber than the rubber tube, the first of the silver tubes made had proven too small, and a tube, the caliber of which was about two millimeters greater than that of the rubber tube formerly worn had to be procured. Owing to the contraction of the trachea about two inches below the opening, whenever the tracheal tube was left out for fifteen or twenty minutes, it was necessary to make the silver tracheal tube long and formed, at its lower extremity, like the Durham tube. This silver tube the patient wore comfortably and with it was able to talk naturally. The author thought that the patient would be obliged to wear the tube the remainder of her life, because of the elastric stricture of the trachea about three inches below the glottis.

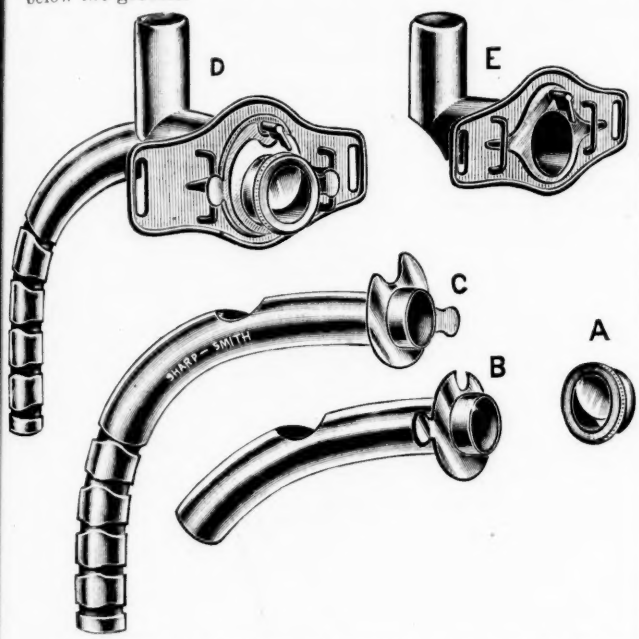

Fig. 3.—Ingals' laryngo-tracheal stenosis tubes (two-thirds size) A, cap with valve to prevent the escape of blast of air during phonation. B, middle tube. C, inner tube. D, instrument complete, all parts in position. E, outer tube.

In the discussion which followed, Dr. Wm. E. Casselberry referred to an interesting case which had been presented to the American Laryngological Association by Dr. Cohen, where the patient was able not only to speak, but to sing, although no air whatever could pass from the trachea to the mouth; and he inquired of the author of the paper especially regarding the voice in the case reported.

Dr. Ingals stated that the patient was unable to speak even in a whisper that could be understood; though by sucking air into her mouth before attempting to speak she could make some sounds with her lips, but the nurses and physicians at the hospital were unable to understand more than one word in ten; her friends, however, had learned to understand her by the movements of the lips.

Several months after the operation the patient was wearing the silver tracheal tube and speaking naturally.

A NEW RECTAL SPECULUM.

BY N. H. HENDERSON, M.D.
SURGEON LAKESIDE HOSPITAL, CHICAGO.

While one would think after examining the various rectal specula now on the market that there would be no room for another, experience has demonstrated that there is. The new rectal speculum as shown in the cut below is sure to find a place in the hands of those who are giving attention to diseases of the rectum. By rotating handle, B, one-half, we completely close the opening, in which position the instrument should be when introduced. As will be observed, when the handle, B, is rotated directly over handle, A, we have a large opening, exposing almost one-half of the caliber of the rectum.

After introducing the speculum the handle, B, is to be rotated little or much, to expose little or much of the field as may be desired. In using the speculum in this way the plug is not necessary, but is only designed to be used in a rectum small enough to indicate a smaller sized speculum; in which case the inner speculum should be withdrawn and used with the plug. We now have two complete instruments capable of a great variety of adaptations.

It is not claimed for this instrument that it takes the place of all other rectal specula, but it will be found on trial, specially valuable in the management of diseases of the rectum. I claim for this speculum some advantages which others do not possess. Many patients present a redundancy of tissue just within the anus, so that when a bi-valve speculum is introduced the field of observation is obscured.

This speculum overcomes this, by supporting the entire circumference of the anus to a depth of three-fourths of an inch. It also holds back from the field of observation any fecal matter that may be in the rectum, which no other speculum does.

This instrument was made for me by Geo.Tiemann & Co., New York, and is also manufactured by Chas. Truax, Greene & Co., Chicago.

APPENDICITIS; WITH ORIGINAL REPORT AND ANALYSIS OF ONE HUNDRED AND FORTY-ONE HISTORIES AND LAPAROTOMIES FOR THAT DISEASE UNDER PERSONAL OBSERVATION.

Read before the Pan-American Medical Congress.

BY J. B. MURPHY, M.D.
CHICAGO.
PROFESSOR OF SURGERY, AND CLINICAL SURGERY, COLLEGE OF PHYSICIANS AND SURGEONS, CHICAGO; PROFESSOR OF SURGERY, POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL; ATTENDING SURGEON TO COOK COUNTY HOSPITAL; ATTENDING SURGEON TO ALEXIAN BROTHERS' HOSPITAL; CONSULTING SURGEON TO HOSPITAL FOR CRIPPLED CHILDREN, ETC.

(*Continued from page 308*).

Case 21.—Date of operation July 24, 1890. Operator, Dr. E. W. Lee. N. C., aged 34 years; female. Present sickness commenced July 16; complained of chills, fever, vomiting, and abdominal pain, latter more pronounced in ileo-cecal region. July 18, pulse 120, temperature 103 degrees. Slight tenderness in ileo-cecal region. July 21, pulse 124, temperture 102.5 degrees. Great pain over whole abdomen. Tenderness over ileo-cecal region marked and induration present. Operation: Appendicisectomy. Appendix large, swollen, and tortuous; no perforation. Appendix contained enterolith in which was imbedded a small spicula of bone. There

were no adhesions around the appendix. Peritoneal cavity opened. No abscess. Pus in the appendix around the enterolith. Gauze drainage. Temperature fell to normal immediately after operation; recovery.

Case 22.—Date of operation Aug. 2, 1890. Operator, Dr. Lee. H. McQ., aged 10 years; female. Present illness of patient began July 27 with pain in ileo-cecal region and diarrhea. August 1, pulse 130, temperature 103 degrees. Tenderness in right iliac region; induration. Operation: Drainage of circumscribed abscess; general peritoneal cavity not opened. Appendix not removed. No foreign body found. Temperature fell to normal within twenty-four hours after operation; recovery.

Case 23.—Date of operation Aug. 22, 1890. Operator, Dr. Lee; present Dr. Bridge, Cook County Hospital. C. P. A., aged 21 years; male. Patient had a similar attack five years ago. Three days previous to operation, patient was seized with sudden pain in right iliac region, temperature 102.2 degrees; temperature August 20, 103.3 degrees; temperature August 21 100.8 degrees. Examination: Abdomen moderately distended, tympanitic. Dulness in right iliac region and marked tenderness over appendix. Tongue slightly coated. Operation: Incision over induration, escape of pus and two enteroliths. Drainage; recovery.

Case 24.—Date of operation Sept. 6, 1890. Operator, Dr. Lee. J. R., 16 years; male. Case occurred in the practice of Dr. McCarthy. Patient's present sickness began August 29 with acute pain in lower part of abdomen; diarrhea. Temperature 101.8 degrees, pulse 112, August 30; temperature 101.3, pulse 106 on August 31; on September 1, temperature 101.1 degrees, pulse 100; on September 2, temperature 101 degrees, pulse 98. Tenderness on pressure over lower part of abdomen which gradually became localized in right iliac region and induration developed. Operation: Incision and drainage of intra-peritoneal abscess. General peritoneal cavity opened. Appendix not removed. Temperature fell to normal inside of forty-eight hours; recovery.

Case 25.—Date of operation Sept. 18, 1890. Operator, Dr. Lee. F. W. H., aged 25 years; male. Case occurred in the practice of Dr. McCarthy. Present illness commenced suddenly September 14 with intense pain in right iliac region, persistent vomiting and diarrhea. General abdominal tenderness, more marked in the right iliac region. Tympanites. Patient lies with knees drawn up and bears a distressed look, temperature 102.2 degrees, pulse 116. September 15, temperature 102.6 degrees, pulse 122. Nausea, singultus. Tenderness and tympanites general. Slight induration in right iliac region. September 16, temperature 102.2 degrees, pulse 126, induration more marked and extensive, tenderness increased. Dr. Lee called in consultation. Diagnosis: Rupture of appendix with intra-peritoneal abscess. Operation: Typical incision; no induration to be felt after incision; dry septic peritonitis; appendix perforated; small abscess around base; drainage. *Exitus lethalis* on third day. Postmortem: General dry septic peritonitis; perfect adhesions around gauze packing.

Case 26.—Date of operation Nov. 9, 1890. Operator, Dr. Lee. Cook County Hospital. Mrs. M. P., aged 32 years. Patient has had several attacks of same nature as present one in last three years. One week before admission to Hospital, present attack began with fever, chills, sweats and pain in right iliac region. Patient presents appearance of a grave typhoid, tongue and teeth heavily coated, lips covered with a herpetic eruption. At time of admission patient had a temperature of 104.6 degrees and had severe septic symptoms. In right iliac region, three and one-half inches from anterior superior spine of ilium is an induration. Operation: Incision over tumor into abscess; pus and feces escaped; packed with iodoform gauze. Death from pyemia, which was present at time of operation, three days later. Temperature reached 106 degrees several times. Frequent chills. No septic peritonitis.

Case 27.—Date of operation Nov. 15, 1890. Operator, Dr. Lee. O. P. P., aged 31 years; male. Patient had sudden attack; severe pain in right iliac region, chills, fever, temperature 103 degrees, vomiting, general abdominal tenderness, more marked in right iliac region where induration could be felt which was dull on percussion. Operation: Incision, drainage of an abscess without opening peritoneal cavity. Appendix not removed. Fecal fistula. Recovery. Patient subsequently had recurrent attacks and was again operated. (See history No. 30.)

Case 28.—Operation Feb. 14, 1891. Operator, Dr. E. W. Lee. R. S., male; aged 28 years. History: For past two years patient has been subject to frequent attacks, beginning with pain in right iliac region, generally accompanied with nausea and vomiting. Attacks usually lasted from a week to ten days. During past six months patient had an attack about every three weeks. Examination: Induration in right iliac region. Operation: Appendicisectomy. General peritoneal cavity opened. The vermiform appendix was found perforated near the base which communicated with an abscess cavity that had opened into the cecum. A probe could be passed through the opening into the cecum. Enterolith. Drainage; recovery.

Case 29.—Date of operation March 9, 1891. Operator, Dr. Murphy. Miss McC., aged 23 years. History: First attack of pain in 1889. Sudden pain in right loin followed by fever, tenderness and vomiting. The swelling gradually increased in loin and was seen by several physicians in the next year, all agreeing that it was a sarcoma of the kidney. It finally was opened in the back and a small quantity of pus escaped. Two fecal stones escaped from the opening after some months; this was followed by the discharge of berry seeds for several months, no other material escaping. At the end of about a month, I operated to close the fistula in the cecum. This was done by suture and was successful. The history of this case extends over a period of three years. Recovery.

Case 30.—Date of operation May 19, 1891. Operator, Dr. Lee. P. O. P., aged 31; male. Cook County Hospital. Patient had a primary operation for appendicitis in November, 1890. An intra-peritoneal abscess was drained but the appendix was not removed. In April, 1891, a laparotomy was performed for removal of the appendix, but on account of the extensive adhesions this was impossible. Patient was seen three days after onset of present attack and by an operation the appendix was amputated; two enteroliths were found in it; a rubber drain was inserted and the abdominal incision partially closed. Patient made a rapid recovery. There remained a small sinus leading down to the iliac fossa for several weeks.

Case 31.—Date of operation, June 4, 1891. Operator, Dr. Murphy. Cook County Hospital. J. H. C., male; aged 27 years. Patient was seen five weeks after onset of attack. His illness commenced with pain in right iliac region. Examination: Hard tumor in right iliac region, not movable, seemingly attached to ilium. Percussion dull over tumor, otherwise normal. Temperature 101.2 degrees. Operation: Incision into pus cavity. The appendix which was difficult to locate was drawn into abdominal incision, ligated near its base and amputated. Drainage; recovery in three weeks. The appendix was perforated near its base.

Case 32.—Date of operation June 9, 1891. Operator, Dr. Murphy. Alexian Brothers' Hospital. F. F., aged 18 years; male. Patient had a typical attack and entered the Hospital five days after the onset when he showed symptoms of a circumscribed suppurative peritonitis. The operation was at once performed and a large abscess drained. The appendix was not removed. Recovery.

Case 33.—Date of operation June 25, 1891. Operator, Dr. Murphy. D. M., male, aged 19 years. Alexian Brothers' Hospital. This case was operated on four days after the onset of a typical attack. A circumscribed abscess was opened; a fecal stone escaped. The appendix was perforated and was removed after simple ligature. Recovery.

Case 34.—Date of operation July 28, 1891. Operator, Dr. Murphy. J. A., age 56; male. Alexian Brothers' Hospital. History: Patient entered Hospital fourteen days after onset of a typical attack. A large induration in right iliac fossa to be felt. Operation: Incision into large pus cavity. Appendix not removed; drained. General peritoneal cavity not opened; circumscribed abscess. Recovery.

Case 35.—Date of operation Aug. 5, 1891. Operator, Dr. J. B. Murphy. Cook County Hospital. A. H., aged 30 years; male. Had an attack six months previous similar to the present. Typical attack July 27. Induration in right iliac region. Operation: Lateral incision. General peritoneal cavity opened. Peritoneum very much congested. Appendix situated along the lower border of ilium. Appendix perforated; one side surrounded by a mass of granulations where it was adherent to the cecum. The probe could be passed through a small opening into the cecum showing where the abscess had emptied. The appendix was ligated and removed. There had been a local gangrene, the defect now in process of cicatrization. Recovery. This is one of the cases that is classed by some authors as cecitis, but the opening in the cecum was made from without inward by an accumulation of pus around the gangrenous appendix.

Case 36.—Date of operation Aug. 10, 1891. Operator, Dr. Murphy. Cook County Hospital. F. D., aged 32 years. Patient was always healthy up to present illness. He was

taken ill with severe pain in the umbilical region; fever and vomiting. The pain increased rapidly and at time of operation was diffuse and uniformly severe. Examination; Pulse rapid and small; legs drawn up; percussion shows abdomen full of fluid nearly up to umbilicus; abdominal walls tense: tenderness diffuse. Operation: Median incision; escape of a large quantity of sero-purulent fluid with fecal odor. Drainage after irrigation of abdominal cavity. Appendix adherent. Patient died on following day. Postmortem: Appendix adherent to under surface of cecum except about one-half inch of tip which was free. At base of appendix was an ulcerated perforation. At side of perforation, enterolith, size of cherry stone. No evidence of a previous abscess cavity. General suppurative peritonitis which had developed before adhesions could take place. The peritoneum of the abdominal and intestinal walls was eroded of endothelium.

Case 37.—Date of operation Sept. 14, 1891. Operator, Dr. Murphy. G. A., male. History: Typical attack. Operation: A circumscribed intra-peritoneal abscess was opened and drained with iodoform gauze. A fecal stone escaped with the pus. Abscess extended deep into back. Recovery.

Case 38.—Operation Nov. 13, 1891. Operator, Dr. E. W. Lee. Miss B. aged 16 years. Sickness commenced with sudden pain in right iliac region; vomiting. Sudden rise of temperature (103 degrees) and pulse. Induration in right iliac region and tenderness more marked in this locality. Operation: Drainage of a large circumscribed abscess. Fecal calculus. Appendix not removed. Recovery.

Case 39.—Date of operation Dec. 14, 1891. Operator, Dr. J. B. Murphy. Miss F., aged 17 years. History: Typical attack. Operation: Performed on fifth day after onset. Intra-peritoneal pus cavity opened. Fecal stone removed. The appendix was gangrenous and perforated; amputated. Abscess cavity packed with iodoform gauze. Recovery.

Case 40.—Date of operation Dec. 19, 1891. Operator, Dr. Murphy. H. F., aged 24 years. History: For the past three years has had repeated attacks of pain in the right iliac region. With these attacks he occasionally had vomiting; always great tenderness in right side. Status Præsens: Patient is emaciated, has evening elevations of temperature and night sweats. For the last three days has suffered from great pain in right iliac region. Examination: Heart and lungs normal. An area of dulness in right side extending from Poupart's ligament to within two inches of the margin of the ribs and as far forward as the linea semilunaris. The induration extended behind from the crest of the ilium to the margin of the ribs. It was most sensitive and approximated the surface more closely an inch to the right and a little below the anterior superior spinous process. No induration could be felt from the rectum. Urine normal. Diagnosis: Recurrent appendicitis with extensive infiltration of the cellular tissue. Operation: Lateral incision an inch to the inner side of the spinous process. The cellular tissue was found infiltrated and indurated a quarter of an inch from the skin. This induration was perforated with the handle of the scalpel until an abscess was reached one and one-half inches below. A small quantity of thin odorless pus escaped. It was found on exploration with the finger that only a sinus had been opened. This sinus was followed upward and backward, and at the lower end of the right kidney was found a renal calculus the shape of a Maltese cross, the bars being one inch in length and three-eighths inches in diameter. It was broken with a heavy forceps and extracted. It had escaped completely from the kidney, and the opening closed, as no urine escaped at time of operation or subsequently. The closure of this opening accounts for the absence of pus in the urine at the time of examination. Patient made an uneventful recovery.

Case 41.—Date of operation Jan. 10, 1892. Operator, Dr. Hartmann. F., aged 9 years; male. Patient was seen one week after a typical attack; had quite a high temperature with a distinct induration over appendix. Operation: At time of operation temperature 105 degrees. An intra-peritoneal abscess was drained; the appendix was not removed. Recovery.

Case 42.—Date of operation Jan. 26, 1892. Operator, Dr. J. B. Murphy. Alexian Brothers' Hospital. J. J. G., aged 26 years: male. During past two years patient has had about a dozen attacks of appendicitis. Operation: (intermediate stage). Appendicisectomy. Appendix was adherent to cecum and showed many cicatrices from previous perforations. Enterolith. Recovery.

Case 43.—Date of operation Feb. 20, 1892. Operator, Dr. E. W. Lee. Miss D., aged 25 years. Sudden attack of pain in right iliac region. Vomiting. Diffuse abdominal tenderness. Temperature 105 degrees, pulse 130 at time of operation. Operation: third day after attack. Usual incision. Drainage of an intra-peritoneal abscess which had previously ruptured and caused a general dry septic peritonitis; no limiting adhesions. Enterolith removed. Symptoms of peritonitis continued and patient died in forty-eight hours. Autopsy not allowed.

Case 44.—Date of operation Feb. 26, 1892. Operator, Dr. Lee. Cook County Hospital. L. J., aged 19 years; female. Patient was admitted to the gynecologic ward of the Cook County Hospital, probably on account of an induration in the roof of the pelvis. The diagnosis of appendicitis was finally made. She was not operated upon until three weeks after beginning of her attack. The operation consisted of incision into abscess, irrigating and packing (with iodoform gauze); general peritoneal cavity not opened. Complete recovery in four weeks.

Case 45.—Date of operation March 11, 1893. Operator, Dr. E. W. Lee. F., 18 years; male. Patient felt perfectly well up to February 28. That day, while riding on a bicycle, the pedals of which were too low, he over-reached with his right foot, and felt a sudden pain in right lumbar region. Fever soon developed and vomiting occurred several times. Bowels constipated. He suffered from great pain above and behind the right anterior superior spinous process of ilium. Excessive tenderness over right side of abdomen, especially in the region of the right anterior superior spinous process. Abdomen very tympanitic; under anesthetic induration was felt which was not apparent before operation. Temperature 103 degrees. Drainage of circumscribed abscess, removal of enteroliths. Appendix not removed. Later fecal fistula developed, which closed spontaneously. Recovery.

Case 46.—Date of operation April 3, 1892. Operator, Dr. J. B. Murphy. Mrs. B., aged 52 years. Typical attack. Nausea, vomiting, local tenderness. No induration. Operation: Third day after the attack. Temperature 102 degrees. Appendicisectomy. Base of appendix very much distended. No adhesions of appendix. A large typhoid ulcer in appendix. Drainage forty-eight hours; recovery.

Case 47.—Date of operation April 5, 1892. Operator, Dr. Murphy. A. K., age 26; male. Case occurred in practice of Dr. Davey. Patient was seen seventh day after attack. A large abscess was drained without opening general peritoneal cavity. The appendix was not removed. A foreign body was found loose in abscess cavity; recovery.

Case 48.—Date of operation April 5, 1892. Operator, Dr. Lee. Cook County Hospital. M. N., aged 52 years; female. Patient's trouble commenced with chills, fever, vomiting, general pain in abdomen which gradually became localized in right iliac fossa. The diagnosis of appendicitis was made and a circumscribed abscess drained. The appendix was not removed. No foreign body present. Patient had parotid abscess, otherwise an uneventful recovery.

Case 49.—Date of operation, April 21, 1892. Operator, Dr. Lee. Cook County Hospital. D. M., aged 28 years. History: Patient's present illness commenced with a sudden attack of severe pain, vomiting and great tenderness over the epigastrium. Had previous good health and no symptoms of pain and distress after taking food. The pain became very intense after a few hours and tympanites set in. The abdomen was uniformly sensitive. No induration could be felt on account of the distension. Temperature 101 degrees, pulse 96. Anxious expression. Diagnosis: General peritonitis from appendicitis. Operation: Lateral incision; general suppurative peritonitis. The appendix was found inflamed in common with the other tissues; not removed. Cause of peritonitis not ascertained. Death twenty-four hours after. Autopsy: General suppurative peritonitis produced by small round perforating ulcer of stomach. It will be noted in this case there was absence of increased local tenderness in right iliac region and the pain was located in the epigastrium, also *absence of history of ulcer of stomach.*

Case 50.—Date of operation May 10, 1892. Operator, Dr. Murphy. Occurred in the practice of Dr. Oswald. C., age 23; male. History: Sickness commenced with sudden pain in right iliac region, vomiting and nausea. Examination: large induration over appendix. Operation: Five days after attack. Incision into abscess; escape of a large quantity of pus with enterolith. Appendix not removed. Abscess cavity packed with iodoform gauze. Recovery. Had one recurrence since; very light; not operated.

Case 51.—Date of operation May 11, 1892. Operator, Dr.

Murphy. T. H., age 46; male. Case occurred in the practice of Dr. T. J. Conley. History: Typical attack. Induration. Operation: Drainage of a large circumscribed abscess containing four ounces of pus. No foreign body. Appendix not removed. General peritoneal cavity not opened. Recovery. Three recurrences since operation. (Not operated.)

Case 52.—Date of operation May 14, 1892. Operator, Dr. Murphy. Alexian Brothers' Hospital. B., age 28; male. Typical attack. Operation several days after attack. An extra-peritoneal abscess was opened; the appendix removed, also enterolith and the abscess drained with iodoform gauze. Recovery.

Case 53.—Date of operation May 18, 1892. Operator, Dr. Murphy. Miss B., aged 24 years. Present attack commenced May 13, 1892, with general abdominal pain, nausea and vomiting. Induration. Operation: Five days after attack. Drainage of intra-peritoneal abscess containing about two ounces of pus. Recovery. Recurrence July 12, 1893. Operated. (See History No. 97.)

Case 54.—Date of operation June 20, 1892. Operator, Dr. Lee. E. B., aged 50 years; male. Seven days before operation patient was suddenly attacked with pain in the abdomen after having partaken of a heavy dinner. A few hours afterward he vomited, and fever set in (temperature 103 degrees.) Abdomen became rapidly distended and tender over the entire surface, more pronounced over the right iliac region. Patient seen on third day by Dr. Lee. Operation advised. Consultation the following morning resulted in postponement of operation. Symptoms continued the same except temperature, which fell to 101 and remained so. Further consultation on the seventh day, operation agreed to. Pulse 90, temperature 101 degrees at time of operation. Usual incision. General suppurative peritonitis present, result of rupture of a circumscribed abscess around appendix. No limiting adhesions. Bowel at seat of circumscribed abscess black and gangrenous. Appendix not removed. Second day after operation feces discharged freely through the wound. Pulse and temperature good. Third day. Escape of intestinal slough. Patient in good condition. Fourth day. Conditions improved. Fifth day. Profuse hemorrhage both from wound and rectum. Patient pulseless. Remained in bad condition and died on seventh day. Autopsy not permitted.

Case 55.—Date of operation June 25, 1892. Operator, Dr. Murphy. W. R., aged 17 years. Alexian Brothers' Hospital. History: Typical attack four weeks before operation. Continuation of fever and sweats with rapid emaciation and tenderness in right iliac region. Status Præsens: Induration extending half way to the umbilicus, tense and tender. Dull on percussion. Operation: Lateral incision. Opened a large circumscribed abscess. General peritoneal cavity not opened; appendix not removed; drainage with iodoform gauze; recovery. This case was re-operated on during a relapse. (See Case 108.)

Case 56.—Date of operation July 9, 1892. Operator, Dr. Murphy. Mr. S., aged 36 years. Case occurred in practice of Dr. Hoelscher. History: Typical attack. Examination reveals induration and dulness on percussion far beyond median line to the left. Operation twenty-eight days after attack. Lateral incision; about a quart of pus escaped; no fecal stone; appendix not removed; general septic peritonitis; recovery.

Case 57.—Date of operation July 16, 1892. Operator, Dr. Murphy. Cook County Hospital. H. W., 22 years; male. Typical attack. Operation four days after onset. Drainage of a large accumulation of pus (intra-peritoneal.) General suppurative peritonitis; appendicisectomy. Local gangrene of appendix; no foreign body; recovery.

Case 58.—Date of operation July 28, 1892. Operator, Dr. Murphy. Miss R., aged 10 years. Case occurred in practice of Dr. Cotton. History: Typical attack, nausea, vomiting, operation eighth day after onset. Lateral incision; escape of about six ounces of pus from an intra-peritoneal abscess. No foreign body; appendix not removed; recovery.

Case 59.—Date of operation Aug. 27, 1892. Operator, Dr. Murphy. A. M., age 22; male. Alexian Brothers' Hospital. Typical history of appendicitis. Operation: Lateral incision. Circumscribed abscess opened. General peritoneal cavity not opened. Appendix not removed. Drainage; recovery. This case was operated upon twenty-four hours after admission to Hospital.

Case 60.—Date of operation Sept. 16, 1892. Operator, Dr. Murphy. J. McC., aged 11 years; male. Case occurred in practice of Dr. P. H. Conley. History: Typical attack. Operation fifth day after attack. Operation: Incision, general peritoneal cavity opened. Pus found extending over bowels beyond median line. Escape of fecal stone with pus. Appendix not removed. Temperature at time of operation 99½ degrees; pulse 98. Facial expression good. Recovery in three weeks. Fecal fistula closed without operation in ten days.

Case 61.—Date of operation Oct. 11, 1892. Operator, Dr. Murphy. H. S., aged 34 years; male. Admitted to Hospital five days previous to operation. Patient gave a typical history of appendicitis; small induration, temperature 101 degrees. Operation: Lateral incision; drainage of circumscribed abscess without entering peritoneal cavity; recovery.

Case 62.—Date of operation, Oct. 15, 1892. Operator, Dr. Murphy. (Case occurred in the practice of Dr. Hoelscher.) Miss F. aged 16 years. History: Typical attack. Operation: Three days after attack. Drainage of circumscribed abscess. Appendicisectomy. General peritoneal cavity was opened. Appendix was perforated, gangrenous and contained enterolith. Recovery.

Case 63.—Date of operation Oct. 15, 1892. Operator, Dr. Murphy. S., age 37; male. Case occurred in practice of Dr. McCarthy. History; Typical attack, nausea, vomiting. Operation: On sixth day. Large abscess containing about a pint of pus. General peritoneal cavity not opened. Appendix enlarged and gangrenous; ligated, amputated. A fecal stone removed. Abscess cavity packed with iodoform gauze. Recovery.

Case 64.—Date of operation Oct. 28, 1892. Operator, Dr. Murphy. Alexian Brothers' Hospital. F. R., aged 18 years. History: Attack typical. Operation: Several days after onset. Lateral incision. General suppurative peritonitis. The appendix and a fecal stone removed; a large quantity of pus escaped. Drainage with iodoform gauze. Recovery.

Case 65.—Date of operation Oct. 28, 1892. Operator, Dr. Murphy. Occurred in practice of Dr. Hoelscher. C. F. B., aged 18 years. Patient was seen eight days after onset of typical attack by Dr. Hoelscher. The temperature was 105 degrees, the pulse 130. Extreme tympanites and general tenderness present. Patient in a profoundly collapsed condition at time of operation. Operation: Drainage of abdominal cavity; a very large amount of pus escaped (about one quart). Death twelve hours after operation. General suppurative peritonitis at the time of operation. Patient also had pneumonia.

Case 66.—Date of operation Oct. 28, 1892. Operator, Dr. Murphy. Alexian Brothers' Hospital. H. G., age 26; male. Typical attack. Operation: Lateral incision. General suppurative peritonitis. Appendix perforated, gangrenous, non-adherent; appendix removed; drainage; recovery.

Case 67.—Date of operation Nov. 2, 1892. Operator, Dr. J. B. Murphy. Miss G., aged 14 years. History: Sudden attack on Oct. 30, 1892, two days before operation; nausea, vomiting, and sudden rise of temperature. Examination. Temperature 102 degrees, pulse 80, local tenderness, tympanites. Operation: Lateral incision over region of appendix into peritoneal cavity. Appendix adherent to side of cecum and covered with flakes of pus; mesentery also infiltrated with pus. Appendix ligated and amputated. Appendix found enlarged, adherent; no perforation, but ulceration of mucous membrane present. Recovery. Remarks: This case is very interesting, as it shows a purulent infection of the peritoneum and mesentery from an ulcer of the mucous membrane of the appendix without gangrene and without perforation. Peritoneal infection has been reported from ulcers in other portions of the intestinal tract without perforation, but this is the first case on record where such a condition is reported as occurring from the appendix without perforation or gangrene.

Case 68.—Date of operation Nov. 3, 1892. Operator, Dr. Murphy. W., aged 36 years; male. Case occurred in practice of Dr. O'Malley. History: Attack typical. Examination revealed a large area of superficial dulness. Operation eighth day. Incision and removal of appendix. General peritoneal cavity not opened. About a pint of pus escaped, also a fecal stone. Packing of abscess cavity with iodoform gauze. Recovery. Pathologic conditions: Appendix completely gangrenous and free in abscess cavity, nothing being left of it but its peritoneal covering.

Case 69.—Date of operation Nov. 11, 1892. Operator, Dr. Murphy. Miss F., aged 26 years. History: Ten days ago patient became very sensitive in right iliac region, and noticed there a hard swelling. There had been no perceptible swelling previous to that time. This increased rapidly in size, and when admitted to the Hospital extended up to the margin of ribs and could be felt distinctly behind. There

was no deformity in back, nor was there a history of trouble in the spine. Urine normal. Diagnosis: Appendicitis. Operation: Laparotomy. Lateral incision; abscess opened without entering the peritoneal cavity. Cellular tissue of abdominal wall very much infiltrated; this was due to a rupture of the abscess into retro-peritoneal cellular tissue by an exertion the day before onset of pain. Pus was odorless, which immediately caused doubt as to the etiology of the suppuration. Exploration of the abscess cavity revealed a sinus leading up to the third and fourth lumbar vertebræ which were tubercular. Rupture of the psoas abscess into the cellular tissue accounts for the sudden onset of symptoms, and the location of and limited disease of the vertebræ accounts for the absence of scoliosis or lordosis. Recovery.

Case 70.—Date of operation Nov. 14, 1892. Operator, Dr. Murphy. Case occurred in practice of Dr. T. J. Conley, Mrs. S., aged 24. History: Typical attack; induration, resonant on percussion. Operation: Fourth day after attack revealed intra-peritoneal abscess and perforation of appendix with enterolith. The appendix was amputated, the abscess cavity drained with iodoform gauze. Recovery.

Case 71.—Date of operation Nov. 26, 1892. Operator, Dr. Murphy. K., aged 14; male. Case occurred in practice of Dr. O'Shea. History: Typical attack. Operation seven days after onset. A large abscess was opened, which contained quite a quantity of blood. After pus escaped, a profuse hemorrhage took place which resembled that of aneurism, which was suppressed by packing with iodoform gauze. A fecal stone was removed; appendix not removed; recovery.

Case 72.—Date of operation Nov. 30, 1892. Operator, Dr. Murphy. Mrs. E., aged 22 years. Case occurred in practice of Dr. T. J. Conley. History: Typical attack. Operation on fourth day: Appendicisectomy. A large circumscribed abscess was present. The appendix was gangrenous and had perforated. Fecal stone. Recovery.

Case 73—Date of operation Dec. 7, 1892. Operator, Dr. Murphy. Miss S., aged 12 years. Case occurred in practice of Dr. Graves. History: Typical attack. Operation on the fourth day of sickness. Intra-peritoneal abscess, containing two ounces of very offensive pus was opened; the appendix was found to be partly gangrenous and perforated, and was removed. The cavity was packed with iodoform gauze. Recovery.

Case 74.—Date of operation Dec. 9, 1892. Operator Dr. Murphy. J. F., aged 25; female. Hospital. History: Patient had frequently complained of pain in right iliac region and occasional,y had pains in back. Present attack began two weeks ago with classical symptoms of appendicitis. On examination a considerable induration was found in the right iliac region which appears to be near the surface. No induration could be felt from rectum. Superficial dulness on percussion. Operation: Lateral incision; circumscribed abscess; appendix not removed; general peritoneal cavity opened. Drainage; recovery.

Case 75.—Date of operation Dec. 16, 1892. Operator; Dr. Murphy. St. Joseph's Hospital. M., aged 28 years; male. One year previous to operation the patient had three attacks of local peritonitis. During the last attack Dr. F. S. Hartmann saw the case and advised operation. The last attack simulated intestinal obstruction very much,so that there was doubt as to the actual diagnosis. Operation: Appendicisectomy. General peritoneal cavity opened. There was present a perforation of the appendix with a circumscribed abscess in region of umbilicus. The wall of the cecum enveloped the appendix. Drainage; patient made a good recovery.

Case 76.—Date of operation Dec. 16, 1892. Operator, Dr Murphy, Case occurred in the practice of Dr. Wittwer. A., aged 26; male. Alexian Brothers' Hospital. Patient was seen several days after onset of attack and showed severe symptoms of general suppurative peritonitis. Operation: The usual incision was made, and a large quantity of pus escaped, which covered the bowels for an area of several inches. Slow recovery.

Case 77.—Date of operation Dec. 25, 1892. Operator, Dr. Murphy. H., aged 15 years; male. Case occurred in the practice of Dr. Mott. Two weeks previous to first operation, patient had a typical attack accompanied with pain, nausea, vomiting and tympanites. On examination a dulness on light percussion over entire abdomen below the umbilical line. Deep percussion resonant. Operation: Lateral incision, large quantity of pus all over the bowels; appendix not removed. Temperature dropped for three days and then rose again to 103 degrees. January 2, in consultation with Dr. Mott, it was found that left side of abdomen was not draining properly. Circumscribed adhesions had formed around an accumulation of pus in that region. The abscess was drained; it was found that this abscess extended into the pelvis. Patient made a rapid recovery.

Case 78.—Date of operation Jan. 28, 1893. Operator, Dr. Murphy. K., aged 22 years; female. Sickness commenced with sudden pain and tenderness in right iliac fossa. At operation, which was performed four days after onset of attack, a large extra-peritoneal abscess was found, and was packed with iodoform gauze. The appendix was not removed. Two weeks after the operation a lobar pneumonia set in, which was followed by a hydrothorax; aspiration; recovery.

Case 79.—Date of operation Feb. 17, 1893. Operator, Dr. Murphy. R., aged 32 years; male. Case occurred in the practice of Dr. Turk. Ten days previous to operation sudden attack of pain and tenderness in right iliac region. Difficult urination: no induration. Operation: Lateral incision and removal of appendix; general peritoneal cavity opened. The appendix was adherent to its surroundings; a fecal stone was found and a perforation of the appendix had taken place. Local gangrene of appendix. Gauze drainage; recovery.

Case 80.—Date of operation Feb. 17, 1893. Operator, Dr. Murphy. Cook County Hospital. W. C., aged 16 years; male. Recurrent appendicitis; three attacks previously. Typical attack; no induration. No temperature at time of operation. Operation: Lateral incision, general peritoneal cavity opened. Appendix situated in the retro-cecal fossa, adherent, very much enlarged and edematous; ligated and amputated. No pus in peritoneal cavity. Drainage; recovery. Pathologic conditions: Mucous membrane ulcerated; very much swollen around the ulcer. Tension on serous covering great.

Case 81.—Date of operation March 9, 1893. Operator, Dr. Hartmann. B., aged 9; male. Patient's illnes began one week previous to operation. Sudden attack of abdominal pain, nausea, vomiting, diarrhea, fever. Abdominal tenderness more pronounced locally; induration. Operation. Drainage of an intra-peritoneal abscess; recovery.

Case 82.—Date of operation March 18, 1893. Operator, Dr. Wittwer. W., aged 8; male. Case occurred in private practice of Dr. Hicks of Burlington, Wis. About two weeks before operation, patient commenced ailing, with an irregular temperature, sweats, occasional vomiting and later on, pain in lower part of abdomen, with a tendency to localization in right iliac region. Examination of urine revealed pus. Induration. Diagnosis: Large, circumscribed perityphlitic abscess with rupture into bladder. Operation: Median incision two inches above symphysis pubis; a large quantity of pus escaped which had involved the whole right iliac region. Two large rubber drains inserted. Complete recovery in four weeks. Appendix was not removed.

Case 83.—Date of operation, March 20, 1893. Operator, Dr. E. W. Lee. R., age 13 years; male. Case occurred in the practice of Dr. P. B. Hayes. Onset sudden, vomiting, pain in right iliac region, extreme tympanites, no induration. At the time of operation temperature 105 degrees F., pulse 124; had been so for three days. Typical typhoid condition. Operation: Appendicisectomy; drainage; no peritonitis. Appendix unusually long and swollen; contained blood and pus; not perforated. Mucous membrane ecchymotic and ulcerated. Temperature fell promptly after operation to 102 degrees F. On the third day patient became deeply jaundiced; rapid recovery.

This is a particularly interesting case, the temperature keeping above 105, and the pulse 134 from the beginning of the attack up to the time of operation. Abdomen enormously tympanitic and tender. He presented all the so-called classical symptoms of general septic peritonitis. Note the pathologic conditions; no peritonitis, simple infection with retention in appendix. How could a diagnosis of the pathologic conditions be made by these symptoms?

Case 84.—Date of operation March 30, 1893. Operator, Dr. Murphy. M. L., aged 22 years; male. Cook County Hospital. History: Patient was transferred from medical division of Hospital after having been sick for five days. Five days previous to operation patient was taken with severe pain in right iliac region. Large doses of morphin were necessary to control the pain. Bowels moved as usual. Patient had noticed no swelling. On examination abdomen tympanitic, severe pain on slight pressure over the appendix; no tumor visible nor palpable; no difference in percussion resonance. The pain increased constantly from the beginning. March 29, 1893, pulse 120, temperature 103.4 degrees, respiration 42. March 30, A.M., pulse 132, temperature 102.2 degrees, respiration 36. Operation: Lateral incision; peri-

toneum opened; packed around seat of operation. Retrocecal abscess, one ounce of pus; appendix amputated; no foreign body or calculus. Sutures inserted, but not tied. Drained with iodoform gauze. In twenty-four hours pulse had subsided to 96, temperature 97.6 degrees, respiration 28. Subsequent convalescence uneventful.

Case 85.—Date of operation April 6, 1893. Operator, Dr. Murphy. M. S., age 30 years. Onset of typical attack April 2, 1893. A temperature of 103 degrees and a pulse of 92 were present at the time of operation. Increased local pain and general tympanites. Operation: Lateral incision; appendix invaginated in a fold of the cecum; a couple of drachms of very offensive pus around it; appendix was ligated near its base; amputated. Drainage; recovery. Appendix had no perforation. An ulceration was the cause of the infection. The mesentery was infiltrated with pus, and there were flakes of pus on the surface of the bowel in the region of infection. This is another illustration of local suppurative peritonitis from ulcer of the appendix without perforation. Patient had a temperature of 103 degrees every day after operation for three weeks, without any other symptom of sepsis or local trouble; as she expressed it, "one of her regular bilious attacks." It annoyed me very much, but no other explanation for temperature could be given. Recovery.

Case 86.—Date of operation April 6, 1893. Operator, Dr. Wittwer. B. L., age 10 years; school girl. History, as given by Dr. Wittwer: Patient was brought to my office two days before operation. Mother gives the following history: For the last two weeks child has been ailing; complained of pain all over body, principally in abdomen around the umbilicus. Child gradually lost flesh, her appetite failed, she had some diarrhea, occasional vomiting, so that finally a physician was called who treated her several days for rheumatism. When I saw her she had some temperature, cheeks flushed, walked into office like a case of hip joint disease. Right leg drawn up in recumbent position. Examination revealed a narrow induration about three inches long in the right iliac region. An operation was made two days later. Typical incision; appendix easily located and found adherent to surrounding tissues; some flakes of pus could be seen on outside of appendix, but no distinct accumulation of pus had formed. Appendix was ligated and removed, suture left in wound, and latter packed with iodoform gauze. Pathologic conditions: Fecal stone. No perforation of appendix. On opening appendix it was found that one-half of mucous membrane towards the cecum was thickened and infiltrated, but not gangrenous, while the distal portion of mucous membrane had become gangrenous and presented the appearance of a diphtheritic patch, ulcerated, with a dirty, thick, grayish, yellow base. There were present in appendix a few drops of pus; recovery.

(To be continued.)

ARMY MEDICAL SCHOOL; CLOSING EXERCISES OF THE FIRST SESSION.

[Reported for the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.]

The first session of the Army Medical School was closed by appropriate exercises at 3 P.M. on Wednesday, February 28, in the Hall of the Library of the Surgeon-General's office. Most of the officers of the War Department were present, including General Schofield, commanding the Army, Major-General John Gibbon, Surgeon-General Sternberg, Quartermaster-General Batchelder, Inspector-General Breckenridge and others; Ex-Surgeons-General Hammond, Murray and Sutherland of the Army, and Medical Directors Gihon and Gorgas, with the medical officers of the Navy on duty in the Department and many prominent members of the profession in civil life, were also interested spectators of the closing scenes of the session. The officers of the graduating class presented a brilliant appearance in the blue and gold of their new uniforms. The members of the Faculty were also in uniform.

Colonel Alden, Assistant Surgeon-General, President of the Faculty, expressed in his opening remarks the gratification he felt at seeing so many present on the occasion. He referred to the need of a special training for the Army medical officer, and enumerated the various duties which he is called upon to perform that are outside of the work of the physician and surgeon as that work is ordinarily understood. "Let us see now," said he, "how the course of instruction provided carries out the purpose indicated: Five courses of lectures are provided, with two courses of laboratory work and practical instruction in litter drill and first aid. The Department of Military Surgery, including, as it does, the care and transportation of sick and wounded and hospital administration, is naturally one of great importance. It takes up the study of modern military weapons, the wounds they produce, and the treatment they demand under the peculiar conditions imposed by the exigencies of the battle-field and the march; the arrangements necessary for the prompt relief of the wounded on the field of battle and their transportation to the hospitals. The Department of Military Hygiene treats of the important subjects of pure air and how to secure it; of water and its impurities and the dangers of disease therefrom; of sewage disposal and drainage; of healthy sites for and sanitary construction of barracks and hospitals; of food, exercise and clothing; of sanitary jurisprudence and quarantine, and of vital statistics and death-rates as indicative of the health of a community. In the Department of Military Medicine are considered the diseases caused by massing men together or those most apt to affect troops in barracks, on the march and in camp, in peace and in time of war; their causes, symptoms, treatment and mode of prevention. Since we all know that disease kills more than the sword, even in war, the importance of this branch is evident. The instruction in the Department of the Duties of Medical Officers is in some measure complemental. It is designed to give the young medical officer such knowledge of and familiarity with official forms and ways of doing Army business that he may apply his professional knowledge to the best advantage. Military administration is a highly organized and nicely adjusted machine, and special knowledge is necessary to its effective working. In this department the student officer is in the first place taught the necessity for and the requirements of military discipline and subordination as the foundation of his efficiency and success, and his relations to the commanding and other officers. He is taught, both theoretically and practically, how to examine recruits; how to examine into and report upon the sanitary condition of his post or camp; how to conduct sick calls; how to make out the certificates for discharge, especially in reference to the question of pension; how to care and account for public property; how to govern, provide for and instruct the men of the Hospital Corps detachment under his immediate command, with many other matters that need not be enumerated. The instruction given is distinctly practical and includes the making out of many papers."

The Laboratory courses from their practical character and the considerable time given to each, as we shall see, are of special prominence and importance. The course of Sanitary Chemistry, after preliminary work necessary to familiarize the students with principles and methods, took up the detection of poisons, such as arsenic in organic mixture, wall papers, etc., of antimony, mercury and lead; the analysis of the fluids of the body; the chemic examination of the

air and results of ventilation; the study of water and its impurities and their detection; the purity of articles of food, such as milk, butter, cheese, flour, baking powder, etc., and the study of important toxic animal and vegetable products. The instruction in the Department of Clinical and Sanitary Microscopy is entirely by laboratory demonstration and work. Here the student officer is made to become familiar with the use of the microscope in its important application to histologic and pathologic and diagnostic work and the technique necessary for the study of diseased tissues and of pathogenic organisms. A systematic study of the more important bacteria follows, such as the bacilli of anthrax, of typhoid fever, of tuberculosis, of diphtheria and of tetanus; the pyogenic cocci, the micrococcus of pneumonia and the spirillum of Asiatic cholera. In each case the forms and conditions of growth of these bacteria are carefully studied with a view not only to their recognition but to an understanding of the best methods of excluding them or arresting their production. Perhaps it is proper to say here to our non-medical friends that the day when bacteria were a scientific curiosity and their study a pastime or fad has passed. The investigation of these microscopic organisms and their effects lies at the very foundation of modern medicine and surgery, and of advanced medical and surgical practice. In this direction lies to-day our strongest hope and brightest prospects of preventing and arresting disease. Inflammation has been studied under the microscope as it actually occurs in various tissues when artificially produced; then the microscopic appearances as they occur in various diseases and various organs.

The Instructor in Hospital Corps drill has given the Student Officers important practical lessons in first aid to the sick and wounded in emergencies and on the battle-field, such as arrest of hemorrhage, application of splints, etc., and in the careful handling of patients in the litter and ambulance drill. The students are required not only to do these things themselves but practiced in giving directions to the men of the Hospital Corps in the performance of this work.

It will, I think, be conceded that the Student Officers have not been idle this winter. The daily exercises have been as follows: Work in the pathologic laboratory from 9 to 12; in the chemic laboratory from 1 to 3; lecture in one of the various courses from 3 to 4; on Saturday instruction in litter and ambulance drill and first aid in the field at Washington Barracks, at 9 o'clock and in riding at Fort Myer, Va., at 11 o'clock.

The School has been favored with several short courses of lectures by gentlemen not officially connected with it, which have been of great interest and value to the class: On Military Law by Major G. B. Davis, Judge Advocate, United States Army; on Comparative Anatomy, by Capt. J. C. Merrill, Medical Department, United States Army; on Medical Jurisprudence, by Dr. Robert Fletcher, F. R. C. S.; on Parasites of Man, by Dr. C. W. Stiles of the Agricultural Department; Professor W. W. Keen of Jefferson College, Philadelphia, has also delivered a most interesting and instructive lecture before the class on Recent Advances in the Surgery of the Head.

The thanks of the School are due these gentlemen for their kind help.

Five newly appointed Medical Officers have taken the entire course and four Assistant Surgeons of some years service have taken such part as their duties allowed. The Faculty have been much gratified by the interest and industry shown by the class. None have been absent from any exercise without cause, so far as reported to me. It should be noted that the newly appointed officers entered the School immediately after passing the severe ordeal of a long examination for which they had been preparing and were hardly in a condition to enter on four months more of hard work.

In conclusion I am directed to report the result of the examinations and to announce that the relative standing of the members of the class is as follows:

Assistant Surgeon D. C. Howard,
Assistant Surgeon A. S. Porter,
Assistant Surgeon W. H. Wilson,
Assistant Surgeon W. W. Quinton,
Assistant Surgeon T. S. Bratton.

Professor Osler of the Johns Hopkins University, was then introduced and delivered an admirable address to the class. After congratulating its members on their success he said he thought it fitting that the Surgeon-General should have invited a civilian to speak to them of their privileges. Knowing the difficulties and annoyances of civil practice he could the better appreciate and demonstrate to them the advantages of the life they had chosen for themselves. Prominent among these was the great advantage they had, not only over civilian members of the profession but also over their own predecessors in the Army, in being graduates of the Army Medical School, and thereby fully equipped to deal with whatever might come to them in the way of duties or responsibilities. He then spoke of the facilities possessed by Army medical officers for advancing many of the allied branches of medicine. Who, for instance, has a better opportunity to study the vegetation of the country than a young medical officer who sees every part of the United States during the course of his service? Army practice gives self-reliance. Stationed at a Western post without facilities for consulting any one older and more experienced than himself he has to call up the best of his own resources, and learns how needful it is to be prepared for all emergencies and to be independent of assistance. The varied character of the practice that comes under the eye of the Army surgeon tends to give him a place in the front rank of the profession. If of studious habits he can, when in the South, inquire into the etiology of malarial fevers and hematuria; or, while in the West, throw some light on the causation and treatment of mountain fever or study the effects of altitude on the capacity of the chest. Professor Osler then reminded them that many of their predecessors had achieved prominence by their contributions to medical literature or their original investigations, instancing Dr. Beaumont in earlier times, and Drs. Woodward and Smart more recently. In conclusion he cautioned the young officers not to hold themselves aloof from their confréres in civil life, but to join the medical associations, be present at their meetings and make friends in the profession.

Colonel Alden then introduced General Schofield, who conceived that little had been left for him to say, as the advantages possessed by the young Army medical officers had been so well shown in the admirable address just delivered. He congratulated

both the students and the Faculty on the work accomplished during the session. The need of a school of this kind had been felt for a long time, and the present Surgeon-General had done an excellent thing in inaugurating it. He desired to impress on the young officers the importance of their position in Army. The medical officer, he said, was more intimately associated with the line than the members of any of the other staff corps; but this they would soon learn, for they could not be an hour at any military post before they would be made to feel perfectly at home. He closed with a few remarks on discipline and obedience to orders, calling attention to the fact that a commanding officer in issuing his orders has at heart only the welfare of all under his command.

The young men were then introduced to the General and a kind of informal reception was held in the Hall, after which a visit of inspection was made to the lecture rooms and laboratories of the School.

In the evening a reception was given by Surgeon-General Sternberg at which the members of the class became acquainted with many officers of their own and other Corps of the Army.

LEGAL REQUIREMENTS FOR THE PRACTICE OF MEDICINE IN THE UNITED STATES.

[Compiled for the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.]

So many changes have been made in the legislation regulating the practice of medicine in this country during the past three years, that the Illinois State Board of Health will include, in its forthcoming Report on Medical Education, the text of all laws on this subject in force at the beginning of the present year in the several States and Territories of the United States, and in the provinces of the Dominion of Canada. From this forthcoming Report, through the courtesy of the Secretary of the Board, Dr. J. W. Scott, some data have been gathered which will be of interest to the spring crop of new graduates, and to medical men generally.

Of the six New England States, Maine, Massachusetts, New Hampshire and Rhode Island have no legal requirements for the practice of medicine. Connecticut has adopted a medical practice act which went into effect Oct. 1, 1893, and in Vermont the law requires the registry of a diploma indorsed by a Board of Medical Censors or of a certificate of satisfactory examination by one of these Boards.

Exclusive of the four States first named, the other States and Territories may be roughly grouped into the following three classes:

In Alabama, Arkansas, Florida, Maryland, Minnesota, Mississippi, New Jersey, New York (act of May 9, 1893), North Carolina, North Dakota, Pennsylvania (after March 1, 1894), South Dakota, Texas, Utah, Virginia and Washington, the diploma confers no right to practice and has no legal value, except, in some cases, to give its possessor standing before an examining board. The right to practice in each of these sixteen States is determined by individual examination before boards of examiners created by law.

In California, Colorado, Connecticut (since October, 1893), Delaware, Illinois, Iowa, Kentucky, Louisiana, Missouri, Montana, Nebraska, New Mexico, Oklahoma, Oregon, Tennessee, Vermont and West Virginia, the diploma is subject to the supervision of some designated body vested by law with authority to determine its validity as evidence of its possessor's qualifications for the practice of medicine. Failing the possession of such a recognized diploma, the right to practice may be acquired by passing a satisfactory examination.

In Arizona, Georgia, Idaho, Indiana, Kansas, Michigan, Nevada, Ohio, South Carolina (since the repeal of the Act of 1888), Wisconsin and Wyoming, the presentation of any kind of a diploma—provided only that it be from a "chartered" medical institution—is the sufficient warrant in law for county clerks, clerks of courts, registrars of deeds and similarly qualified judges of medical fitness to admit to practice.

Following is a résumé of the legal requirements for practice in each State and Territory of the United States, in force Jan. 1, 1894:

Alabama.—A certificate of successful examination by the State (or a county) Board of Medical Examiners. Diplomas confer no right to practice.

Arizona.—Registry, with a county recorder, of an unrevoked, uncancelled "diploma regularly issued by a medical college properly and lawfully organized under the laws of the State wherein said college shall be located."

Arkansas.—A certificate of successful examination by the State (or a county) Board of Medical Examiners. Diplomas confer no right to practice.

California.—A certificate issued on the diploma of a college in good standing or upon a successful examination by one of the State Boards of Medical Examiners—regular, homeopathic or eclectic.

Colorado—Similar to California, except that there is but one State Board of Medical Examiners.

Connecticut.—A certificate of registration of the diploma of a college "recognized as reputable by one of the chartered medical societies of the State," regular, homeopathic, eclectic; or a certificate of satisfactory examination by a committee appointed for the purpose by the State Board of Health.

Delaware.—A certificate based upon the registration of a diploma from "a respectable medical college," or upon "a full and impartial examination by the State Board of Medical Examiners."

District of Columbia.—Nominally the indorsement of a diploma, or an examination, by a committee of the District Medical Society; practically no requirement.

Florida.—A certificate of satisfactory examination by the State (or a district) Board of Medical Examiners. Diplomas confer no right to practice.

Georgia.—The registration of a diploma from any "incorporated medical college, medical school or university." The clerks of the Superior Courts are the sole judges of the value of the diploma as evidence of fitness for medical practice.

Idaho.—The record of a diploma at a county seat.

Illinois.—A certificate issued by the State Board of Health upon the diploma of a legally chartered medical institution in good standing as determined by the Board, or upon a satisfactory examination by the Board.

Indiana.—The registration, in a county clerk's office, of a diploma "from some reputable medical college."

Indian Territory.—*a*. Cherokee Nation: An examination by the Board of Medical Examiners; *b*. Choctaw Nation: A certificate based upon a diploma or upon an examination by the Board of Medical Exam-

iners; c. Creek Nation: Payment of $25 annually as a license fee.

Iowa.—Similar to Illinois.

Kansas.—The registry of a diploma from "some respectable school of medicine," or of a certificate of qualification from some State or county medical society.

Kentucky.—A certificate from the State Board of Health issued upon the "diploma of a reputable and legally chartered medical college."

Louisiana.—The record of a diploma from "any medical institution of credit and respectability" after indorsement by the State Board of Health.

Maine.—No legal requirement. In 1887 an act to regulate the practice of medicine was passed by the Legislature but was vetoed by the Governor.

Maryland.—A certificate issued upon a satisfactory examination by the State Board of Medical Examiners. Diplomas confer no right to practice.

Massachusetts.—No legal requirement.

Minnesota.—Similar to Maryland.

Mississippi.—Similar to Maryland—except that the examination is made and the certificate issued by the State Board of Health.

Missouri.—Similar to Illinois.

Montana.—Ten years of practice; a certificate upon the diploma of a college "in good standing," or upon an examination by the State Board of Medical Examiners.

Nebraska.—A certificate issued by the State Board of Health upon the diploma of "a legally chartered medical school or college in good standing," as defined in Section 8 of the Act of July, 1891.

Nevada.—The record of a diploma from "some regularly chartered medical school."

New Hampshire.—No legal requirement.

New Jersey.—A license issued upon a successful examination by the State Board of Medical Examiners. Diplomas confer no right to practice.

New Mexico.—A certificate upon the diploma of a legally chartered medical institution in good standing, or an examination by the Territorial Board of Medical Examiners.

New York.—A license issued upon a successful examination by one of the State Boards of Medical Examiners—regular, homeopathic, eclectic. Diplomas confer no right to practice.

North Carolina.—A license issued upon a successful examination by the State Board of Medical Examiners. Diplomas confer no right to practice.

North Dakota.—Similar to North Carolina.

Ohio.—The diploma of a respectable school of medicine, or a certificate of qualification from a State or county medical society.

Oklahoma.—A license issued by the Superintendent of Public Health upon a medical diploma or after examination.

Oregon.—A certificate on the diploma of a college "in good standing," or after examination by the State Board of Medical Examiners.

Pennsylvania.—A license issued after examination before one of the State Boards of Medical Examiners: Act of May 18, 1893; takes effect March 1, 1894. Diplomas will thereafter confer no right to practice.

Rhode Island.—No legal requirement.

South Carolina.—A certificate of verification of the diploma of a reputable medical college. An Act of Dec. 24, 1890, abolished the State Board of Medical Examiners created by the Act of 1888 and under which the diploma conferred no right to practice.

South Dakota.—A license issued by the State Board of Health after examination. Diplomas confer no right to practice.

Tennessee.—A license on the diploma of a college "in good standing," or after examination by the State Board of Medical Examiners.

Texas.—A license issued after examination by a District Board of Medical Examiners. Diplomas confer no right to practice.

Utah.—A license issued by the Territorial Board of Medical Examiners after examination. Diplomas confer no right to practice.

Vermont.—The registry of a diploma indorsed by one of the Boards of Medical Censors, or a certificate of examination by one of the Boards.

Virginia.—A license issued after examination by the State Board of Medical Examiners. Diplomas confer no right to practice.

Washington.—Similar to Virginia.

West Virginia.—A license on the diploma of a reputable college, or after examination by the State Board of Health.

Wisconsin.—The indorsement of a medical diploma by the censors of either of the State or county medical societies.

Wyoming.—The record of a diploma with a registrar of deeds.

SOCIETY PROCEEDINGS.

American Electro-Therapeutic Association.

The Third Annual Meeting Held in Chicago, Sept. 12, 13 and 14, 1893.

AUGUSTIN H. GOELET, M.D., President.

(*Continued from page 313*).

DR. KELLOGG then read in abstract a communication from DR. GEORGES APOSTOLI of Paris, France.

I have received from Dr. Apostoli of Paris, a somewhat voluminous paper entitled, "Du Courant Alternatie Sinusoidal en Gynecologie," by Mina Kaplan-Lapina, which gives a full account of thirty-four cases treated by the sinusoidal current by Apostoli, the treatment being begun before July, 1892. Since that time, Dr. Apostoli has applied the current in the treatment of sixty additional cases, the results of which have not yet been reported. Dr. Apostoli requested me, in a letter recently received from him, to present before this Society an abstract of this paper. The paper consists of 134 large pages of printed matter, so that anything like a complete abstract would be impossible, but I herewith present the following translation of the conclusions drawn by the writer of the paper from the observations recorded:

"In reading the thirty-four observations recorded, one recognizes very readily many weak points which it is sufficient simply to indicate. Some of these observations are incomplete, or without clinical value, by reason of the premature interruption of the treatment. In some cases the treatment was applied too infrequently, so that all benefit received was lost in the interval between the treatments. In other cases the treatment was not sufficiently vigorous, the application was too short, the number of alternations insufficient, or the voltage too low. I have presented the entire series of cases just as they were, since if some of them are without individual value, they form altogether a total which brings conviction, especially from the point of view of the inocuity of the method.

"In order that the new method should become popularized, it is first of all important that it should be studied with the most rigorous exactness.

"It is necessary that failures as well as successes should be known to all in order that each may be able to judge of the facts. At the beginning of the employment of new

methods choice is impossible, and the remedy must be applied imperatively, if one begins by treating uniformly all cases, even the most unlike. At Dr. Apostoli's clinic he has applied the remedy at first to all patients who have presented themselves, whether suffering from fibroma or lesions of the appendages, applying the new method uniformly; naturally the result has been variable, these variations have been closely observed, and have made it possible to make a selection of cases which was at first impossible.

"I can not do better, in closing, than to quote the following from the resumé of a communication presented by Dr. Apostoli at the International Congress of Gynecology at Brussels, September 15, 1892.

"The alternating sinusoidal current which M. D'Arsonval has introduced into electrotherapy is useful in gynecology, and the following are the general results of this new therapeutic agent:

"In five months, from March to August, 1892, thirty-four patients in my clinic, comprising twelve cases of fibroma and twenty-two cases of appendages, have been treated by the alternating current. In all these cases the application has been the same, one pole in the uterus and the other upon the belly. The duration of each seance was five minutes; the applications have been made two or three times a week.

"The rate of alternation has been varied according to the circumstances, or rather according to the sensibility of the patient, between a minimum of 4,000 to 6,000 and a maximum of 11,000 to 12,000 per minute.

"The apparatus which I have employed is the first model constructed by Gaiffe, which consists of Clark's magneto-faradic machine modified and transformed by D'Arsonval, going with great speed a maximum difference of potential of sixty-four volts, and with moderate speed a difference of thirty-two volts. This apparatus has been propelled by the pedals of a sewing machine. All my thirty-four patients have been carefully observed, and the following are the general conclusions which may be drawn from this initial period of treatment; conclusions which appear to be not yet entirely definite by reason of the imperfect character of the instrument employed, and the relative brevity of the experiments:

"1. The alternating sinusoidal current applied in the intra-uterine cavity, and in the conditions under which I operate, is always well borne and free from danger.

"2. Its application is followed by no painful or febrile reaction, and is, on the contrary, generally accompanied by manifest sedative effects.

"3. It appears to have no marked action upon hemorrhage as a symptom, but sometimes has a tendency to prolong this symptom.

"4. It exercises a very decided effect upon the symptom pain. This action was noticeable from the very first seance, and most often immediately at the end of the seance.

"5. It is a useful remedy in the treatment of leucorrhea which under its action often diminishes or disappears.

"6. It has no appreciable effect upon hydrorrhea or fibroma in certain cases.

"7. Its influence upon anatomic retrogression in cases of fibroma has not yet been clearly established.

"8. It increases the resolution of peri-uterine exudates."

The discussion was further continued by a paper on

FURTHER STUDY OF ELECTRO-ANESTHESIA AND FREQUENCY OF INDUCTION VIBRATION.

By WILLIAM F. HUTCHINSON, M.D., of Providence, R. I.

Read in the absence of the author by Dr. W. H. Herdman.

Since I had the honor to lay before the Fellows of this Association, at the last annual meeting in New York, the results of experimentation in producing induced current vibrations of extreme rapidity and in counting them accurately, by means of comparison with musical tones, have been still encouraging. By means of one of Cook and Read's standard pitch pipes, which gives a double octave complete by turning a movable arm, more precision in count has been attained than was possible with any tuning fork, which could only give tones and half tones without musical interval. This greater accuracy of computation of wave lengths has led to confirmation of my previous idea, that it is necessary to have exactly a certain number of vibrations per second to produce the effect sought, viz: local anesthesia,—that a greater number increases pain; a lesser is without effect.

And it led to further studies which I am now to lay before you, whose upshot has convinced me that the reason, the cause of production of electric anesthesia, must be sought in that principle of mechanics termed "the superposition of small motions." Since this may not be quite familiar to all, permit me to illustrate by imagining a slender wire such as a piano string, fixed at both ends, and stretched so that its tension greatly exceeds its weight.

Now let us see what happens when a small transverse disturbance in a single plane is imparted to this wire:

When one fixed end is reached by this wave, it is reflected along its path and back again until the filament is brought to rest by gravity, friction, etc. During these passages to and fro, it is found that a certain space upon the wire remains permanently at rest—is dead, so to speak, and that this space is about the middle of its length. Wave after wave passes through it as long as the original impetus or any new one lasts but, being of precisely equal lengths, neutralize each other at the dead point, where rest reigns.

It is in this way that I conceive electric anesthesia is created and maintained; only replacing the reflected wave on the wire by efferent impulses along the nerve whose tract of supply we seek to influence. And so it is seen that these two elements, the electric wave and that of the nerve, must be exactly alike, or no dead point—no anesthetized space, can occur. Now, to produce a reflex change in the nerve center a summation or addition of centripetal excitation is required, and when these reach a certain number, the center responds (Stirling).

Reflex actions require time. It takes a certain division thereof for a note of pain to reach the center and its sensory mandate to return, and if this be measured, taking into account how much is occupied by the passage of the nerve current along the nerves involved and the latent period of muscular contraction, and subtract this from the total time, the remainder will represent the time occupied by the changes in the center, or the reflex time. This has been found to vary from .0555 to .0471 of a second (Helmholtz). If these calculations of the physiologist are correct, it will follow that just as many vibrations must be imparted to a sensory nerve, inward bound, as are proceeding outwardly upon it, in order that a dead point, a zone of anesthesia, may be created.

To my satisfaction, this calculation corresponds closely to results reached by the singing rheotome. You will perhaps recall in my account of former experiments how, when the speed of the ribbon ran above a certain number of vibrations per second, pain was rather increased than lessened, and no anesthesia followed even prolonged applications. The speed then found useful was that of major C—or about 540 vibrations per second. Allowing for small variations of speed of nerve transmission in different persons, the rate of electric wave and that of nervous impulses is seen to be identical, thus proving, to my mind, that pain is simply a mechanical expression of disturbed energy, to be destroyed, at least temporarily, by such foreign vibratory action as will restore rest to a part of the path along which it moves.

And, since all morbid conditions of the body alter the rate of transmission of nerve impulses, it will be found necessary to ascertain accurately this rate before applying electrodes to painful spots, or an extraordinary increase of sensibility will follow. It is, however, a simple matter to do so by placing small electrodes along the course of any unaffected nerve trunk, like the median, and running up and down the scale with the ribbon, keeping within a tone of major C, until a tingle and subsequent numbness is felt in skin tracts supplied by said trunk. That sound means as many vibrations, may be read from a scale, and is the normal rate of nerve impulses in the case in question.

Sometimes I find this normal rate locally interfered with, as in a felon or carbuncle, when high inflammation has increased its speed; but as a rule for practice, the above is pretty safe to follow.

Perhaps some of the difficulties and failures I have experienced during the last year's work with the singing rheotome have been due to imperfect comprehension and unskilful application of the law.

I have found no cause to change my instrument, although Mr. Louis Downs, expert electrician, devised a plan whereby, by altering the extent of a magnetic field about a horse-shoe magnet, he obtained a note at least two octaves above any that I had been able to get, and it seems to me at present that it is sufficient to maintain the rate rather than seek for higher speed. Yet it is possible that the same tone an octave higher may do better work by producing anesthesia more rapidly, or extending its area, which still is restricted in my hands to a space scarcely longer than the electrode. I propose to use Mr. Downs' apparatus in a series of experiments later.

(To be continued.)

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All members of the Association should send their Annual Dues to the Treasurer, RICHARD J. DUNGLISON, M.D., Lock Box 1274, Philadelphia, Pa.

SATURDAY, MARCH 10, 1894.

INTERNATIONAL SANITARY CONFERENCE.

Through the London *Standard* several days ago the intimation was made that the American delegates to the International Sanitary Conference, now in session in Paris were not in sympathy with the other delegates with regard to relaxing quarantine regulations to prevent the spread of cholera, and at the same time hinting that they were obstacles to the work of the Conference, and that it was a Conference of European Health Authorities, and that legitimately they had no business there.

At the Conference held at Venice about a year ago, to which the United States was not invited, there was a proposition to relax quarantine, and a number of the countries represented then were favorably inclined, France, though, still insisting on some kind of quarantine. Another Conference was held later at Dresden, when all agreed that were then present except Russia, Turkey, Greece and Spain. It was, however, found during the summer, that when threatened with cholera nearly all resorted to some kind of quarantine. England has for years been opposed to quarantine mainly from commercial reasons, and no doubt also to the fact of less liability to certain epidemics that affect the Continent, especially that portion bordering on the Mediterranean. It was also agreed at Dresden that whenever cholera made its appearance in any country, notification of the same should be given to the other members of the Conference. This agreement was not always carried out promptly, lest it might injure the business interests of the country or place.

The commercial aspects of an epidemic are more jealously guarded by the different countries of Europe, than by the different States in this country. The following cablegram explains itself, and is corroborative of the intimation contained in the *Standard:*

PARIS, Feb. 27.—Several Paris newspapers remark with surprise that the United States delegates to the International Sanitary Conference oppose every proposal to relax quarantine restrictions, and support all measures tending toward more exacting regulations of immigration. The delegates from other powers are said to have become convinced that the American representatives wish to use the resolutions of the Conference as means of repressing emigration from Europe to America.

It is to be hoped that our delegates will insist that when cholera prevails in a country or place, that no immigrants be sent to the United States from the same. Cholera has always been introduced into the United States through the steerage, and the experience of the past shows how important this is to us. The conditions that obtain here are entirely different from what they are in Europe, especially when it is borne in mind what an important factor the steerage is, in the development and propagation of disease.

In the summer of 1892, Hamburg received immigrants from cholera infected districts of Russia, and fearing that the disease might break out in that city made arrangements to lodge them outside of the limits, and from there to send them direct to the steamer for shipment to the United States. It made no difference to Hamburgers how and where the disease was spread, but Fate decreed otherwise, and even after the cholera made its appearance in Hamburg, it was not announced until after eighteen days. Other instances, showing the cupidity of steamship companies and of cities occurred that summer.

In 1893 Naples for a time denied the presence of cholera in that city so that immigrants should be allowed to leave that city for this country, although the immigrants came from different places in Italy where cholera existed. In one instance they were inspected and supposed to be all right, when a few days after the departure of the steamer cholera broke out, and about the same time the Marine Hospital Inspector accidentally discovered that a number of cases had died of that disease in that city and fresh cases were occurring daily.

There is no more striking illustration of the disposition of steamship companies, than in the case of the steamer that left Genoa with 450 immigrants collected from places in Italy where cholera was prevailing, for Rio. Possibly there may not have been cholera in Genoa at the time, but not long after the departure of the steamer the disease was acknowledged to be there. Soon after sailing cholera broke out on the steamer, and before Rio was reached 150 cases and 70 deaths occurred. The steamer was not allowed to land, and on its return to Genoa, stopped at the Island of Teneriffe for provisions and water. As the result of being allowed to land, cholera was introduced into the Island, and before the epidemic was ended over one thousand died. In addition to the suffering of those on the steamer, the loss of life on the Island, and the horrors incident to such an epi-

demic may be justly attributed to the selfishness and cupidity of the steamship company.

Our delegates are right in trying to secure such safeguards, as will prevent the introduction of cholera into this country by immigrants. The more we impress the European authorities that this country will not permit them to do as they please in this matter, the more care will be exercised, if not from humane, from financial reasons. It is also claimed by some that there will be no danger from that source the coming summer. How do they know? This pandemic of cholera is not yet over in Genoa, and at this time recrudescence of the disease is occurring at a number of places, while at the same time it must be borne in mind that there are countries and places where cholera has not yet appeared during this visitation.

ARMY MEDICAL SCHOOL, NETLEY, ENGLAND.

From the *Lancet*, of February 10 we learn that on January 31 the sixty-seventh session of this School was brought to a close. This School was established a few years after the Crimean war to remedy deficiencies in the education of the medical graduates selected by competitive examination for service in the Army. The results of the recent examinations held in the School were read by Brigade-Surgeon J. LANE NOTTER in the presence of a distinguished company, including SIR ALFRED LYALL, SIR JOSEPH FAYRER, SIR THOMAS LONGMORE and others. The marks gained at the competitive examination for admission as the approved candidate are added to those resulting from the work done at Netley, and the commissions and rank of the graduates are determined by the combined numbers. Eleven candidates were approved for the Army Medical Service and twelve for the Indian Medical Service.

After congratulating the prize winners on having scored their first public success, SIR ALFRED LYALL in a felicitous speech reminded the young officers that the prizes of the world were before those who had not taken premiums, as well as before those who had lately proved themselves so successful. Success put good spirits into a man and sent him into the world with good hopes and with a well-merited degree of confidence in himself. He said he felt sure it was not necessary to warn the prize winners not to take away too much of this confidence. Though it was an excellent thing to have won prizes, prizes were not everything in life, and an examination did not test those very high qualities which come in with such effect later—qualities which formed the mainspring of professional success—judgment, activity and accuracy in thought and action. The whole history of professional career showed that those who had not won prizes were often later on in life very formidable rivals of those who had. He observed that although the word, "luck," was an element in the success of many, yet the word formed by the prefix of a "p" would have far greater influence on the careers of those listening to him, and he reminded his hearers that no less than three officers of the service had of late been awarded the Victoria Cross for bravery in Burmah. In addressing the Indian officers he spoke of the immense field open to them, not only in the medical department of the army in India, but also in the civil departments in the goals and sanitary service. In speaking of the width of field he mentioned the names of distinguished officers of the Indian Medical Service who had been led away from medical work to become administrators and ambassadors. He advised all the officers of both Services, when in India, to cultivate the friendship of the natives, to get to know and understand them, for they were worth knowing; and to study their languages, their religions and their prejudices. In wishing the young officers prosperous careers he spoke to them of the preservation of their health, and reminded them that good health means steady nerves, and steady nerves power at critical times—power to cope with difficulties and to pass through times of stain in such a way that in future years such moments could be remember with pleasure and satisfaction. He hoped that the young officers would ever do their duty in the spirit of men who remembered that they had in trust the reputation of England and the character and traditions of high and noble services.

SIR JOSEPH FAYRER spoke of the pleasure which he always felt in the opportunities accorded him of addressing a few words to the young officers before they left the Netley School. He said that he did not consider that they need much fear the Indian climate, for although epidemic diseases were common and severe in India, the influenza, pneumonia and bronchitis of this country were almost as much to be dreaded. He spoke of the enormous field of research open to the young officers of both Services; he reminded them that medical science was still in its infancy and that they should go to India and other parts of the world with unbiased minds ready to observe, record and discover. They left the Netley School splendidly equipped and in every way fit to go to India and other foreign stations and build up the science of the future. He also spoke to them of the preservation of their own health in tropical climates. He wished them good health and good fortune, and hoped that they might one and all some day revisit Netley.

Surgeon-Major-General BROKE-SMITH addressed a few words to the company, thanking SIR ALFRED LYALL for his kindness in coming to Netley to distribute the prizes and for the admirable address which he had delivered. The ceremony was brought

to a conclusion by a few words from Brigade-Surgeon-Lieutenant-Colonel NOTTER, in which he wished the young officers Godspeed. The company was afterwards entertained at luncheon at the Army Medical Staff mess.

PATHOLOGIC LESIONS IN INSANITY.

The pathologic anatomy of insanity in its simple, acute and so-called partial forms is yet largely a matter of conjecture. We have, it is true, the stigmata of degeneracy in the hereditary types and the congestion of mania and the ischemias attending many cases of melancholia, but these are not constant or even so frequent as for their occurrence to be considered the rule. In a very large proportion of the cases of acute insanity we are forced to fall back on the assumption of microscopic changes as yet beyond the scope of our powers of observation, or to assume as might, perhaps, be done in accordance with the later pathologic theories, a toxic action directly on the brain. The phenomena of simple insanity, mania, melancholia, and the so-called primary dementia, are not altogether inconsistent with the hypothesis of a toxine, but it will probably be a long time before the theory of such an origin will receive general acceptance. The difficulty of this hypothesis is a little greater with the systematized insanities, even those that are most purely psychoneurotic rather than degenerative in their nature. Still, even here, there are facts that may be held to support it, e.g., alcohol, which produces acute delirium and sometimes mania also gives rise to a characteristic paranoia. It is not unjustifiable to suppose, therefore, that a toxine which may in certain quantity overwhelm the nervous system and produce generalized derangement, may under other circumstances and in what we may call a continued dosage, bring about a condition of chronic partial alienation.

To those, however, who wish to hold to the theory of microscopic changes in the brain, the comparatively recent researches in the minute anatomy of the nervous system by RAMON Y CAPAL, KÖLLIKER, VAN GEHUCHTEN and others, may afford some suggestions. GOWERS, and more recently FERRIER, have emitted the supposition that derangements of the terminal end brushes of the spinal nerves may account for certain spinal diseases, Landry's paralysis for example, the pathology of which has thus far eluded our search; and TANZI, in a review of the recent progress of research in the anatomy of the nervous system, has suggested that the perfection or otherwise of contact, or rather contiguity, of these processes to the nerve cells will account for the facts of consciousness and mental capacity. According to his theory he accounts for certain actions, once conscious and labored, becoming unconscious and automatic, by the supposition that the contiguity of the nerve fibrils to the cells has reached its maximum and thus affords the least possible interruption or hindrance to the nerve wave, and by the same method of reasoning he explains the various degrees of individual capacity for different kinds of work. It is not possible to give here his line of argument, but it is not difficult to see how it will apply to psychic derangements, and while the idea is purely hypothetical, it yet comes within the legitimate range of the scientific uses of the imagination. It suggests an interesting though rather difficult line of microscopic research which may or not be fruitful of results.

CHOLERA.

A recent cable from Athens says that it is learned from official dispatches that cholera has reappeared in Constantinople. A dozen deaths from this disease have recently occurred, chiefly in the barracks. It is believed that the authorities are hiding facts which would show the wide extent of the epidemic. A Berlin cable of February 27, says that a dispatch from Wundsbeck, three miles from Hamburg, says that two cases of supposed cholera have been found in the Poolstrasse in that town, and that the patients have been removed to the hospital. It is to be hoped that our delegates to the Conference at Paris will insist that when cholera does occur in a country, immigrants from that country shall not be sent to this country. The experience of the past has shown how important this question is to us. The conditions that obtain here are decidedly different from those in Europe; at the same time it must be borne in mind what an important factor the steerage is in the development and propagation of disease. During the past summer immigrants were hurried on board ship and not allowed to remain in ports, when the local authorities and the steamship companies knew that they came from infected localities, and how often.

YELLOW FEVER.

The presence of yellow fever at Rio Janeiro and the unusual conditions incident to the siege that obtain there, will not alone cause the quarantine authorities of the Gulf and South Atlantic ports, and the Marine Hospital Service to be on their guard, but also the Medical Department of the Navy. Already cases are reported on the *Newark*, and there is no telling when others will occur in the other vessels at that station. Yellow fever is said to be increasing, and the sanitary condition of Rio is very bad. The *Newark* has been sent further south where lower temperature prevails, others sent to sea, and every possible precaution is taken to prevent communication with the shore by the crews of those that remain. We shall watch with much interest the effort to purify, and prevent the spread of the infection on the *Newark*.

It is the first time for a number of years that the disease has appeared on a vessel belonging to our Navy, so early in the season.

The last number of the JOURNAL contained the recommendations given by a committee which had been appointed by the Conference of Gulf Quarantine Authorities, held in New Orleans, Feb. 2 and 3, 1894, with regard to the regulation of the fruit trade during the quarantine season. The recommendations differ slightly from the regulations of the Treasury Department, and the Conference asks that the regulations of the Treasury Department be so modified as to coincide with the views expressed by the Conference. The recommendations will no doubt receive due consideration, as Drs. Cochran, Patton and Hargis (the Committee) are old and experienced yellow fever experts, in fact none better living, and personally and officially interested in protecting their respective States from yellow fever.

RIGHT OF A STATE TO SUPPORT ITS INSANE IN PRIVATE ASYLUMS.

The Supreme Court of Missouri holds constitutional, in a decision rendered Dec. 23, 1893, in the case of State v. Seibert, State Auditor, section 8 of the Act of the Legislature of that State approved April 1, 1893, appropriating "for the support of the indigent insane in the insane asylum of the city of St. Louis, who belong to the State outside of the city of St. Louis, fifty thousand dollars, ($50,000), which sum shall be paid upon the requisition of the treasurer, indorsed by the mayor of the city of St. Louis and approved by the Governor, in equal monthly installments." If the appropriation had been made for the support of the insane asylum of St. Louis, the court says there could be no doubt of its unconstitutionality, for the latter is indisputably a private institution, belonging to and controlled by the city, and the State constitution expressly forbids the Legislature making any grant of public money to any individual association, municipal or other corporation whatever. But while, regardless of constitutional restrictions and limitations, a Legislature has no power to raise money by taxation, or appropriate for purely private purposes, public money may be applied to the support of the insane. A private corporation or individual may be the recipient of the funds of taxation, provided that the use be a public one. And there being no constitutional inhibition against the State dispensing its public charity through the agency of a private institution, the court further says, it can see no reason why the insane of the State, not belonging to the city of St. Louis, who are found in the city, may not be cared for and supported in its insane asylum at the public expense, if it can be as well and economically done. The expediency of providing for their support is a matter that must be left to the discretion of the Legislature.

CONSENT AS A DEFENSE TO DANGEROUS OPERATIONS.

Consent to surgical operations in dangerous cases, where the effect is fatal, is only a good defense to a charge of manslaughter, where the operation is performed with due care and skill. It is no excuse for recklessness or even want of usual skill. So holds the Supreme Court of Washington in the case of State v. Gile, decided Jan. 9, 1894, where a conviction of manslaughter was effected. A number of expert witnesses testified in this case. Some of them were positive that deceased, an old man, died from the effect of a surgical operation performed upon his hip, it was alleged, without his consent, by a physician only employed to reduce a supposed dislocation of the head of the femur by simply pulling the bone into its proper place, while others seemed to think that death might have resulted from some other cause. The condition of deceased's hip at the time of the operation was shown to have been better than it had been for months previously. He was not shown to be suffering from any disease; but it appears that after the operation was performed he never rallied, but, on the contrary, steadily declined until he died. With all the circumstances and evidence before them, the jury found adversely to the surgeon's contention that the cause of death was not shown beyond a reasonable doubt, and the Supreme Court states that it is unable to say that their conclusion was not supported by the evidence. It is also to be noted that the dying declaration of the patient, that he had been "butchered" by the doctors, it is held, simply meant killed in an unusual, cruel or wanton manner, was not a mere expression of opinion, and was admissible in evidence.

PRESIDENT GARFIELD'S CASE.

We shall begin, in an early issue, the publication of original notes of the case of PRESIDENT GARFIELD.

The late DR. D. W. BLISS of Washington, would not permit them to go out of his possession during his life time. Recently the heirs of DR. BLISS turned the record over to DR. ROBERT REYBURN, who is now the sole survivor of the staff of physicians in attendance.

The notes were recorded at the time by DR. REYBURN, and have a professional interest which time can not dim.

The melancholy fate of PRESIDENT GARFIELD was made even sadder by the constant attacks on his physicians through the public press. These attacks were mainly due to misinformation, rather than to jealousy or malice.

Time has softened many of the asperities that were then manifest, and the profession are now quite prepared to give unprejudiced attention to this *cas célèbre*.

CAPTIOUS CRITICS.

We are naturally pleased to see the great interest taken in the articles from time to time published in the JOURNAL, but when the editors of other journals pervert friendly interest to carping criticism on what we do *not* publish, we have a clear right to invite their attention to a homely adage which reads, "*Mind your own business.*" It is with sincere regret that we apply the invitation to the editors of the *Philadelphia Medical News* and the *Pittsburg Medical Review*, but their bad manners in attacking DR. WOODBRIDGE, a valued contributor, and a worthy member of the ASSOCIATION, for daring to divide his article in two parts; and attacking in savage strain the editor of this JOURNAL for presuming to publish the same (also in two parts), seems to show a desire to find fault, as ridiculous as it is senseless.

CORRESPONDENCE.

LETTER FROM EUROPE.

Major Girard, Surgeon U. S. Army, to Professor Senn.

No. I.

WÜRZBURG—JULIUS HOSPITAL—PROF. SCHÖNBORN—DR. HOFFA.

WURZBURG, Feb. 13, 1894.

Dear Dr. Senn:—On my arrival in Würzburg I proceeded to the Julius Hospital, where thirty-two years ago I had attended the clinics, and was greatly surprised and pleased that, instead of being directed to the old amphitheater in the main building, I was informed that a new operating room with attendant offices had been constructed in the second court and occupied since 1889. I repaired thither and presented myself to Professor Schönborn, the distinguished operator of this University. I met with the cordial reception usually bestowed upon Americans, especially when provided with an introduction from you. It being the hour for the clinical instruction we proceeded through a large anteroom paved with marble terrazo to the amphitheater. This room has accommodations for about 200 students; the framework of the seats being of iron, the walls of cement, the floor of cement stone; the whole room can be and is treated twice a week with a powerful stream of water, thus effectually disposing of any accumulation of effete matter. In this respect, as well as in the lighting, it is superior to that of Göttingen. In this latter place a large glass front faces the amphitheater, which is also lighted by a skylight, while in Würzburg the three sides of the amphitheater above the seats and the ceiling are all of glass, providing an excellent illumination. Night operations are lighted by a gas chandelier, which can be raised and lowered. The operating table is a marvel of ingenuity.

The clinic commenced with presentation of a spindle-celled sarcoma adjoining the knee, a pes valgus, an osteosarcoma of the femur and a fistula in ano. The consulting staff, as you call them, composed of three students of the advanced course, distinguished themselves by very brief answers in a low voice. The Professor excusing himself to me for this exhibition, I suggested timidity, but he bluntly called it ignorance. He operated on the fistula with the greatest care, curetting it after laying it open, carefully searched for possible side channels and then cut off with scissors all the superlying tissues, considering it all tubercular tissues. The usual iodoform gauze packing terminated the proceeding.

A patient was then brought in with a tubercular abscess over the manubrium sterni. After chloroforming an incision was made over the bulging abscess and a large quantity of pus escaped, which apparently had burrowed along the lower border of the clavicle. The whole clavicle was exposed by an incision and a large counter incision made in the axillary cavity, giving passage to an enormous quantity of pus, the origin of the abscess apparently proceeding from the under part of the sternum. This was removed by chisel, gauze, and rougeurs, exposing an extra-pleural cavity in the chest. The Professor indicated where he would incise the internal mammary artery, but found it impossible to seize the violently spurting vessel among the rigid tissues and after long continued ineffectual attempts he had to content himself with plugging the cavity with iodoform gauze and thus arresting the bleeding. I would have felt safer if the Paquelin cautery had been applied, but kept my own counsel.

I am promised for to-morrow by Professor Schönborn a high excision of carcinoma of the rectum, and by Dr. Hoffa, the orthopedist, an operation for congenital luxation of the hip joint.

I met Dr. Hoffa, who is quite well known in the Eastern States from a sojourn there, at his private clinic and was fortunate enough to witness the above operation, which is a specialty of his. He stated that he had made it seventy times with uniform success. I saw a number of convalescent cases with excellent results. A girl of 18, on whom he operated, had one side operated on with good motion. The peculiar lordosis of the unoperated case still existed, but disappeared at once after the second excision. His operation differs from that of Lorenz, by its being made with a posterior incision, which is more suitable for resection of the head of the femur. In very small children, he contents himself with excavation of the acetabulum, while in grown persons, owing to the difficulty of obtaining good adhesion, he saws off the head immediately above the trochanter. In the former operation Lorenz's method is claimed to be preferable, as causing less hemorrhage. This, however, seemed to be very slight even in Hoffa's method. A slightly curved incision about eight inches long parallel with the border of the ilium is carried down to the gluteus maximus which is divided in the direction of its fibers down to the gluteus minimus, which has to be divided transversely. The trochanter being reached its muscular attachments are peeled off beneath the periosteum and the bone sawed through, so that when it is brought into proper position the sawed surface is in exact apposition with the ilium above the acetabulum. The head is then removed and the capsule carefully excised. The periosteum of the part of the ilium, which is to receive the trochanter, is freshened. After careful flushing the limb, from the extreme flexed position maintained during the operation, is extended, the wound packed with iodoform gauze, and the limb placed in an extension apparatus. The operation appears to have obtained favor among the German surgeons, as I saw a convalescent from it at Koenig's clinic.

Dr. Hoffa has a very complete set of orthopedic apparatus, among which those liberating adhesions in joints by means of oscillating weights particularly attracted my attention.

The cases in Professor Schönborn's clinic were first, Rydygier's operation for carcinoma of the rectum. A short description of the operation as performed here may be of interest. A curved incision starts from about two inches of the anus along the left sacro-iliac articulation to the rim of the ilium, and is met by a transverse one along the upper border of the sacrum. The left sacro-iliac ligaments are divided. The sacral nerves of that side are sacrificed. The sacrum after blunt liberation from the soft parts is

tipped over and exposes the rectum. This part of the operation was complicated by severe hemorrhage, which required numerous ligatures. The rectum was ligated after the usual precautions and excised, after which the ovaries and some of the intestines came into plain view. Professor Schönborn is averse to suture of the peritoneum, as it greatly prolongs the operation and increases its dangers. The wound is simply packed with iodoform gauze. For the same reason he prefers bringing down the bowel to the external orifice and stitching it to an incision around the external sphincter, instead of making an intestinal suture. He also believes that in case the sutures do not hold, the disaster with external suturing is not as serious as when the feces escape into the pelvic cavity, between the ends of the bowel. He is not in favor of locking up the bowels, as eventually this brings a great strain to bear from the inevitable accumulation.

The next operation was for mastoid disease of only six weeks standing with otorrhea, which two weeks ago suddenly became arrested, resulting in rise of temperature, tenderness over the mastoid process, headache, etc. An incision parallel to the ear, over the process exposed the bone, which was at once attacked with chisel and gouge. Pus was only reached when the inner table was exposed, which already revealed a perforation and fibrinous deposit on the dura. Every vestige of diseased or infiltrated bone was removed by the gouge, the cavity packed with iodoform gauze and the external meatus filled with iodoform. Professor Schönborn insisted on early operation in all these cases and on its being made thoroughly. The most minute care was taken to preserve asepsis.

I may mention here, that I learned that the arrest of hemorrhage of the internal mammary in yesterday's operation by the iodoform tampon was successful. Professor Schönborn, on inquiry, informed me that he did not believe that the cautery would arrest hemorrhage from such a large vessel and that he had to resort to the tampon because it was impossible to seize and ligate the artery in the dense cicatricial tissues which surrounded it.

My next will be from Heidelberg.

Yours very truly, A. GIRARD.

The Therapeutic Use of the Sulphites.

PARIS, Feb. 19, 1894.

À M. le Rédacteur JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION *à Chicago:*

Très Honoré Confrère:—Je viens de lire dans votre numéro du 3 février une étude très intéressante, du Dr. Joseph Jones sur les *sulphites et hyposulphites.*

M' e' tant moimême beaucoup occupè de le question.

Je vous prierais de vouloir bien faire parvenir à value collaborateur le Volume "traitement rationnel de la Phthisic Pulmonaire," qui contient un chapitre important sur le *Médication Sulfitée.*

Cette lecture lui permetra è une prochaine occasion se mentionnen mon nom parmi les partisants de la mèthod.

Veullez agreèr avec mes remercíments anticipes l'assurance des mes sentiments très confraternals.

DR. DE PIETRA SANTA.

[TRANSLATION.]

"I read in your number of February 3 a very interesting study by Dr. Joseph Jones, on the sulphites and hyposulphites.

"I have myself been much occupied with this question. I beg you to bring before your collaborator the book 'Rational Treatment of Phthisis Pulmonalis,' which contains an important chapter on medication by sulphites.

"This reading will permit him on the next occasion to mention my name among the partisans of this method."

[The volume referred to by our distinguished confrère, who is editor of the *Journal d' Hygiene* of Paris, was published in 1875. Chapter VI of this book contains a strong argument in favor of medication by sulphites in cases of phthisis pulmonalis. He cites the monograph of Giovanni Polli (of Milan) 1860–1861, presented to the Royal Institute of Sciences and Letters of Lombardy. "Sur les maladies par ferment morbifique, et sur leur traitement par les sulfites alcalins et terreux."

Dr. De Pietra Santa says:

"Sulphurous acid has the property of preventing and arresting all the fermentations of vegetable and animal matters. Its association with alkalin bases, as soda, lime and magnesia, far from modifying its manner of action, and destroying its antifermentative action, renders it on the contrary more regular, more energetic, more permanent, and permits the introduction in the organism, with known and ponderable doses, without altering the principles of organic life.

"The perfect innocuity of the sulphites, and their complete tolerance by the organism, in rendering possible the administration (prophylactic or curative) in all the affections produced by a pathologic ferment (virus, contagion, or miasm) as in intermittent or paludal fevers, acute and chronic exanthems, typhoid fevers, and diseases from purulent absorption."—EDITOR.]

Hay Fever.

CHICAGO, March 3, 1894.

To the Editor:—In reply to the question of Dr. F. C. Ewing in the JOURNAL of this date a list of the best hay fever resorts can be obtained by writing to one of the officers of the United States Hay Fever Association, for their last manual —for 1893.

Their addresses are: Hon. Frank B. Fay, Chelsea, Mass., President; Rev. John Peacock, D.D., Holmesburg, Pa., Secretary. Yours truly, S. S. BISHOP.

No Smallpox in Minnesota.

RED WING, MINN., March 6, 1894.

To the Editor:—Please contradict the report of smallpox in St. Paul. There has been none there this year. The report of students exposed therefore is a mistake. There is none in Minnesota.

CHAS. N. HEWITT, Sec'y State Board of Health.

ASSOCIATION NEWS.

The Association Train will leave Chicago Monday, May 28, via Santa Fe R. R., Rio Grande Western, and Southern Pacific, for San Francisco via Denver, Colorado Springs, Leadville, Manitou, Glenwood Springs, Salt Lake, Ogden, Truckee and Sacramento. Returning, after the meeting, the train will pass through Sacramento and Northern California to Portland, thence east by way of the Northern Pacific R. R. to St. Paul; and Chicago, Milwaukee and St. Paul Ry., St. Paul to Chicago. A stop over at Yellowstone National Park for those who desire it has been arranged, and it is understood that at several places on the journey there will be short stops. President Hibberd's party in a special car join the train at Chicago, and the St. Louis party are expected to join at Kansas City. From all points east and south, concentration on this train should be effected at Chicago and St. Louis.

SOCIETY NEWS.

The Ramsey County (Minn.) Medical Society met February 26. The following officers were elected: Dr. A. B. Ancker, President; Dr. Davis, Vice-President; Dr. H. Longstreet Taylor, Secretary; Dr. O. S. Pine, Treasurer and Dr. J. M. Finnell, Chairman of the Pathological Section.

The Colorado State Medical Society.—*To the Members of the American Medical Association:*—Members of the AMERICAN MEDICAL ASSOCIATION are cordially invited by the Colorado

State Medical Society to stop over in Denver on returning from the coast and attend the meeting of the Society convening on June 19 and continuing through June 20 and 21.

Members who expect to return via Denver are invited to correspond with the Secretary, that invitations to participate in the program, and proper entertainment may be arranged. EDMUND J. A. ROGERS, President.

A. Stewart Lobingier, Secretary.

Onondaga Medical Society.—The regular quarterly meeting of the Onondaga (N. Y.) Medical Society was held in the Society's rooms February 28.

Papers were read as follows: Dr. H. L. Elsner, "On the Diagnostic Value of Stomach Inflation, Report of Cases and Presentation of Patients;" Dr. W. S. Cheesman, "Supra-pubic Cystotomy in Vesical Hemorrhage;" Dr. D. M. Totman, "A Case of Supra-pubic Cystotomy for Vesical Calculus;" Dr. John VanDuyn, "A Case of Cyst of the Kidney;" Dr. G. E. Clark, "Questions Concerning Nitro-glycerin."

Pennsylvania State Medical Society.—*Change of Place of Meeting.*—In view of the fact that the largest hotel in Gettysburg was burned recently, and will not be rebuilt in time for the meeting of this Society, it was deemed best after consultation with the Board of Trustees to change the place of meeting, and as the Philadelphia County Medical Society extended an invitation for the Society to meet in Philadelphia, it was deemed wise to accept the invitation.

The Forty-fourth Annual Session will be held in Philadelphia May 15, 16, 17 and 18, 1894.

H. G. MCCORMICK, President.

Wm. B. Atkinson, Secretary.

The Hare Medical Society.—The Hare Medical Society of the Jefferson Medical College gave its annual dinner February 27 at the Penn Club, Eighth and Locust Streets. President C.S. Magnum acted as toastmaster. L. S. Bent responded to the toast, "The Trustees;" Professor H. A. Hare, to "Policy of the Faculty;" Professor E. E. Montgomery, to "The Jefferson Hospital;" Professor W. M. L. Coplin, to "A Tribute to Hygeia;" M. G. Moore, to "Class of '94;" E. A. Moye, Jr., to "Class of '95;" Professor G. E. DeSchweinitz, to "Hospital Appointments;" Dr. Thomas G. Ashton, to "Experiences of a Young Practitioner;" and Dr. J. Chalmers Da Costa, to "Men Who Have Made Jefferson Famous." The Entertainment Committee consisted of John W. F. Moore, B. J. Powell and W. W. Hoffman.

Florida Medical Association.—The twenty-first annual meeting of the Florida Medical Association will be held in Tampa, Florida, Tuesday, March 20, 1894. Officers: President, Frank H. Caldwell, M.D., Sanford; First Vice-President, A. J. Wakefield, M.D., Jacksonville; Second Vice-President, R. P. Izlar, M.D., Ocala; Secretary and Treasurer, J. D. Fernandez, M.D., Jacksonville; Librarian, J. H. Douglas, M.D., Jacksonville. Leslie W. Weedon, M.D., Tampa, Chairman Committee of Arrangements.

The meeting will be called to order Tuesday, March 20, by Dr. Leslie W. Weedon, Chairman Committee of Arrangements, who has charge of the opening exercises. The President's address will then be delivered.

The reading of papers and discussion of same will be commenced and continued, at the will of the Association, throughout the session.

BOOK NOTICES.

Proceedings of the Philadelphia County Medical Society. Vol. XIV, Session of 1893. LEWIS H. ADLER, JR., M.D., Editor. 8vo, cl., gilt top. Philadelphia. 1893.

This handsome volume of 484 pages contains the papers read before the Philadelphia County Medical Society, and the discussions thereon. These papers have been published elsewhere from time to time; several of them in this JOURNAL, but it is well to thus place them in enduring form for convenient reference and preservation.

Tenth Biennial Report of the State Board of Health of Maryland for the Two Years Ended Dec. 31, 1893. Annapolis: King Bros. 1894.

This report includes an account of the investigations and acts of the Board during the period mentioned.

Dr. C. W. Chancellor, for many years the efficient Secretary, was appointed U. S. Consul at Havre, France, and was succeeded by Dr. James A. Steuart, who was for several years Health Commissioner of Baltimore and therefore entirely familiar with the sanitary work of the Board.

The Year-Book of Treatment for 1894. A Critical Review for Practitioners of Medicine and Surgery, by twenty-four Contributors. Pp. 492. Philadelphia: Lea Brothers & Co. 1894.

This is a critical summary in convenient form of the literature of the year on the various branches of medical science, by well-known English authors. The power of condensation is very judiciously exercised by the editor, and the arrangement and selections in the present volume are in every way equal to the nine excellent year-books that have preceded it. It is very likely to be looked into for handy reference, when the ponderous and elaborate encyclopedic year-books are left upon the shelf.

A Practical Treatise on Medical Diagnosis, for Students and Physicians. By JOHN H. MUSSER, M.D., Assistant Professor of Clinical Medicine in the University of Pennsylvania, Philadelphia; President of the Pathological Society of Philadelphia, etc. Octavo, 873 pages, 162 engravings and two colored plates. Cloth, $5.00; leather, $6.00. Philadelphia: Lea Brothers & Co. 1894.

There are many works on the subject of medical diagnosis, and this of Dr. Musser's will take an honorable place among them.

An examination of the book shows that the author's omissions have been very few. It is divided into two parts, of which the first includes all topics relating to general diagnosis, and the second those of special diagnosis. There are six chapters in the first part; of which the first is devoted to the introduction; the second to the data obtained by inquiry; the third to the data obtained by observation; Chapter 4 to Bacteriological Diagnosis; the Examination of Exudations, Transudations, and Cystic Fluids; Chapter 6 to the Morbid Processes and their Symptomatology. In Part 2, the diagnosis of diseases of particular organs is set forth, and one chapter is devoted to the consideration of constitutional diseases. There are eleven chapters in this part.

The book is well printed, the paper is good, and the illustrations are excellent.

Transactions of the Royal Academy of Medicine in Ireland. Vol. XI. Edited by WILLIAM THOMSON, M.A., F.R.C.S., General Secretary, Surgeon to the Richmond Hospital, Dublin. Dublin: Fannin & Co. 1893.

This is a volume of 518 pages, well printed and well illustrated. It contains the List of Officers, List of Honorary Fellows, Rules of the Academy and the "Transactions" proper.

The work of the Academy is divided into six sections, viz: Section of Medicine; Section of Surgery; Section of Obstetrics; Section of Pathology; Section of State Medicine; and Section of Anatomy and Physiology. There are papers by various Fellows, all of which are interesting, and many of permanent value. The volume opens with an admirable paper by Dr. Joseph O'Carroll on "Saturnine Encephalopathy." Dr. Wallace Beatty reports "A Case of Myxedema Successfully Treated by Injections of Extract of Sheep's Thyroid." Dr. Charles Bell has an exhaustive illustrated paper on "Cancer of the Rectum." Dr. W. J. Smyly, the Master of the Rotunda Hospital, makes report of "112 Cases of Abdominal Section." Dr. T. More Madden furnishes a paper on "Removal of Gravid Uterus," and Dr. A. Birmingham reports a case of absence of the ileo-cecal valve.

Tumors, Innocent and Malignant; Their Clinical Features and Appropriate Treatment. By J. BLAND SUTTON, Assistant Surgeon to the Middlesex Hospital, London. With 250 engravings and nine plates. 8vo, cl., pp. 511. Philadelphia: Lea Brothers & Co. 1893.

This book is handsomely printed and profusely illustrated. The illustrations are new for the most part. The text is peculiar in many respects; in the author's desire to be original he makes some curious statements, and throughout the book the histology plays but a secondary part. His classification also is *sui generis*, and it is obvious that a classification which leads the author to place the psammomata under the head of papillomata, is not in accordance with the generally accepted histologic facts. In the four pages devoted to the psammomata—if we except the opening statement that "these are tumors composed of globular bodies arranged in layers, usually calcified and imbedded in the connective tissue," . . . there is nothing to indicate their morphology, and their analogy if not identity with the sarcomata is not even hinted at.

Woodhead, whose authority is unimpeachable, says, 3d edition, p. 585:

"It (the psammoma) consists of a branching mass of spindle cells in which are numerous blood vessels, at the sides of which are a number of bud-like or club-shaped processes. The vessels themselves, seen in section, are surrounded by layers of spindle cells or flattened cells, which are prolonged on to the outer surface of the bud."

Cornil and Ranvier directly place the psammomata among the sarcomata by making them the sixth variety, under the name of *sarcoma angiolithique*. Rindfleisch places the psammoma in a new class which he termed endotheliomata. Quénu accepts Rindfleisch's classification as a subvariety of the vasculo-connective tissue type. We have made these comparisons for the purpose of showing how far our author is away from the standard teaching. Clinically the work is strong.

The chapters on the dermoid cysts are the most satisfactory of any in the book, but in general it may be said that so far as histology is concerned, it is lamentably deficient.

Medical Jurisprudence, Forensic Medicine and Toxicology. By R. A. WITTHAUS, A.M., M.D. Professor of Chemistry, Physics and Hygiene in the University of the City of New York, and TRACY C. BECKER, A.B., LL.B. Professor of Criminal Law and Medical Jurisprudence in the University of Buffalo, with many collaborators. Vol I. pp. 845. New York: William Wood & Co. 1894.

This book when finished is intended to be a complete text-book on the subject. Volume I contains the "Introduction;" The "Legal Relations of Physicians and Surgeons," by T. C. Becker; "The Law of Evidence Concerning Confidential Communications," by Chas. A. Boston; "Synopsis of the Laws Governing the Practice of Medicine," by W. A. Poste and Chas. A. Boston; "The Legal Status of the Dead Body," by T. C. Becker; "The Powers and Duties of Coroners," by A. Becker; "Medico-Legal Autopsies," by H. P. Loomis; "Personal Identity," by I. C. Rosse; "Determination of the Time of Death," by H. P. Loomis; "Medico-Legal Consideration of Wounds," by G. Woolsey; "Medico-Legal Consideration of Gunshot Wounds," by Roswell Park; "Death by Heat and Cold," by E. V. Stoddard; "Medico-Legal Relations of Electricity," by W. N. Bullard; "Medico-Legal Consideration of Death by Mechanical Suffocation," by D. S. Lamb; "Death from Submersion or Drowning," by I. C. Rosse; "Death from Starvation," by E. V. Stoddard. The subjects connected with neurology, obstetrics, and the application of the microscope to forensic medicine are left to be included in the two remaining volumes.

The Introduction contains a historical account of the literature of the subject from the earliest times down to the present day, and the copious footnotes attest the painstaking labor which the editor-in-chief has given to the subject.

The article on the Legal Relations of Physicians and Surgeons by Mr. Becker, includes a discussion of their acquirement of the right to practice medicine and surgery; their legal duties and obligations; their right to compensation; their privileges and duties when summoned as witnesses and their liability for malpractice. These questions are treated with reference to the decisions of the courts and it would seem as if most questions of medico-legal character had now been so clearly commentated upon by the courts, as to leave little actual doubt as to what the law is. In regard to the question of experts, Mr. Becker states:

"In some foreign countries, notably in Germany and in France, experts in medico-legal matters have an assured official position, and are generally not allowed to be selected at haphazard according to the will or length of purse of those who need their services. The consequence of this method of obtaining expert evidence is, that expert witnesses in those countries command a high measure of respect and honor. Unfortunately, however, in this country, where the opposite practice prevails, the weaknesses of human nature are such that the common people, newspapers, lawyers, and even the courts in some recorded opinions and decisions, have come to express a great want of confidence in the weight and value of expert testimony. This deplorable result of a bad system of procedure is universally recognized, yet our legislatures have as yet refrained from attempting to correct it."

The book will be found extremely valuable, not only as a reference book, but as an instructive and readable one.

A Text-Book of the Theory and Practice of Medicine by American Teachers. Edited by WILLIAM PEPPER, M.D., LL.D. In two Volumes. Vol. II. Pp. 1046. Philadelphia: W. B. Saunders. 1894.

The syndicate system of writing text-books has its commercial advantages, but individual writers however meritorious have no opportunity of placing their works before students, who are compelled to buy the syndicate books. From a publisher's standpoint it is only necessary to secure one professor to write an article from each of the principal medical colleges and the sale of the book is certain, and all possible rivalry reduced to a minimum.

In the book before us many of the objectionable features of syndicate book writing have been eliminated, as the author's name is attached to each article. We thus know what credit should be attached to each, and where to fix the responsibility.

One would be captious indeed could he find fault with those selected to write the articles in this volume, for their names are familiar to the entire profession, as those having a right to speak with authority, and they are not so numerous as in some other syndicate books. It is the system, and not the individuals that we criticise. Professor Henry M. Lyman contributes twelve chapters; Professor Pepper, thirteen; Professor James C. Wilson, four; Professor Fitz, three; Professors Osler and Delafield each two; and Professors Welch and Holland each one.

The volume opens with a chapter on the biology of bacteria, infection and immunity by Wm. H. Welch. His chapter is extremely interesting, gives the morphology and classification, the food, vital manifestations, distribution, agencies injurious to bacteria, modifications of characters, marks of differentiation, and general considerations concerning infection, general etiology, toxic products of bacteria, immunity, prophylactic and curative inoculations. In regard to serum-therapy Professor Welch says:

"It is evident that the difficulties to be overcome in the successful application of serum-therapy to large animals and to man are great. It is important not to generalize, but to work out for each disease separately a sound experimental basis for this mode of treatment, as has already been done with considerable success for tetanus. This statement is sufficiently evident when we consider the varying conditions which underlie immunity from different diseases, the varying degrees of immunity attainable, and our imperfect knowledge as to both of these points as regards many diseases."

The chapter on "Obesity" by Professor Lyman is one of the most original and practical of the many excellent papers in the volume.

The well considered chapter by Professor Osler "On Diseases of the Blood," is beyond praise, and we may conclude this notice by saying that the book, as a whole, is not only a highly creditable production, but reflects honor on American medicine.

MISCELLANY.

Dr. W. H. Taggart, formerly of Freeport, Ill., has been elected President of the Chicago Dental Society.

Acquitted.—Dr. Louis Barth of Grand Rapids, Mich., who has been subjected to a malicious prosecution at law for alleged assault, was acquitted by the jury March 3.

The Virginia Legislature has a bill pending to cause the appointment of a proper number of women physicians to each hospital for the insane.

Will Now Legislate.—Dr. Spooner, formerly Surgeon of the 55th O. V. I., a resident of Republic, Seneca County, has been voted his seat in the Ohio House of Representatives in place of the present incumbent, Mr. Flummerfelt.

The Georgia Legislature.—According to the *Medical Arena* (Homeop.) one "ever vigilant Dr. Orme" knocked out the Board of Health Bill in the House of Representatives. The *Arena* which is nothing if not medical, seems quite happy over the alleged defeat of the bill.

The Cornell Inquest.—The death of a colored woman who was found unconscious in a room full of chlorin gas, at Cornell University is being investigated by the coroner. It is sincerely to be hoped that this criminal rowdyism will not be fastened on any student of the University, although the press dispatches strongly hint that such is the case.

Health Officers Organize.—There is a movement on foot in the State of Connecticut, to organize a State Association of town health officers. The regular meetings will be held under the auspices of the State Board of Health. Dr. C. A. Lindsley its well-known Secretary, has taken an active part in the organization.

A Rock Island (Ill.) Economist.—According to the Rock Island *Argus* certain economists in the city government of that town propose to convert an old abattoir into a small-pox hospital. This will make the old germs shriek with pleasure, at having company and good feeding in their old age. An abattoir for a hospital! Shade of Tyndall defend us!

Effect of a New York Statute.—There is a recent statute in New York which requires persons suing corporations for damages for alleged injuries, sustained, to undergo inspection. A young woman recently sued the elevated road for damages, and the Judge required the inspection. In another case, a roofing company was sued for injuries received by boiling tar spattering upon her while she was walking along Bleecker Street where agents of the company were at work. Like the elevated road, the roofing company insisted upon an examination, and Judge Pryor appointed Mrs. Dr. K. S. Sterling to act under the direction of a referee. It is said that this opens up a new field for lady physicians.

Smallpox in New York.—The New York *World* very properly says: The hiding away of smallpox cases in tenement houses is a crime which it would be inconceivable that anybody should commit, if the fact of its commission were not almost daily brought to the public's knowledge. By reason of its frequency, the Health Board declares, the smallpox epidemic has got beyond control and the whole community is threatened. The moral would seem to be that severer penalties should be prescribed and enforced for the offense of concealing contagious diseases. Smallpox is a disease that disgraces any community in which it exists, because it is propagated only by contagion, and the means for its entire suppression are in the hands of the authorities of every municipality.

An Unventilated Courtroom.—At the Barth trial at Grand Rapids, Mich., February 28, the court was adjourned suddenly on account of the sudden illness of five of the jurymen. One juror was found unconscious in his room in the hotel where the jury has boarded, and four others were soon afterward attacked, becoming seriously ill for several hours. It was at first thought that the jurors had been made ill by eating canned meat, but medical examination showed that the illness was due to foul air in the courtroom. The room has been densely crowded during the trial and it was impossible to secure ventilation for the corner occupied by the jury.

A Traveling Menace.—Mary Pochlaska, a Polish woman of about 40 years, afflicted with smallpox, has escaped the custody of the Health Department of Chicago and is wandering about some district of the city trying to elude the health officers and the police. Three officers of the Health Department and all the police of the Rawson Street Station are said to have hunted for her. She evidently has but one thought and that to escape confinement in the smallpox hospital, which she seems to think a very den of cruelty.

The case was reported to the Health Office February 28. Dr. Chauncey F. Chapman of the Health Department investigated the report and found it a certain case of smallpox which had evidently been running about four days. Before the ambulance arrived at the house March 1, the doctor who originally reported the case telephoned the Health Department that the woman had made her escape from her home during the night and her relatives and friends professed entire ignorance of her whereabouts.

The woman had not been found up to March 3, and the aid of the parish priest was solicited, in order to induce the persons having her in concealment to disclose her whereabouts. It seems that the police are not particularly active in this duty.

Hospital Notes.

The West Penn. Hospiial at Pittsburg, with 350 inmates, was quarantined on account of smallpox, February 25.

Hospital at Winona, Minn.—The citizens of Winona have organized the Winona General Hospital Association. The Hospital will be supported by voluntary subscriptions.

Hospital at Davenport, Iowa.—The Newcomb homestead at Davenport has been purchased for $10,500, and will be converted into a hospital by the Christian Home Society, of which Mrs. Walter Chambers is President; Miss Alice Kimball and Mrs. J. P. VanPatten, Vice-Presidents; Miss Smetham Secretary and Mrs. Kircher Treasurer.

The Freedmen's Hospital of Washington, D. C., has a new Superintendent to succeed Dr. Purvis of that city. His successor, Dr. D. H. Williams of Chicago, was appointed a member of the State Board of Health some years ago by Governor Fifer, as a Republican representative of his race in Illinois. He was removed from this position by Governor Altgeld to make room for a Democrat. Now he is appointed by a Democratic authority to succeed a Washington Republican of the same African descent—*Fervet olla, virit amicitia.*

Charity Hospital, Cleveland, Ohio.—A special meeting of the medical staff of Charity Hospital was held February 24, with the following members present: Dr. W. J. Scott, President; Dr. H. J. Herrick, Dr. N. Stone Scott, Dr. D. B. Smith, Dr. C. B. Parker, Dr. H. H. Powell, Dr. J. H. Lowman, Dr. F. D. Brandenburg, Dr. William T. Corlett, Dr. J. E. Cook and Dr. Dudley P. Allen. President W. J. Scott and Secretary P. L. Milliken were reëlected.

The Lebanon Hospital (N. Y.) which was started Feb. 25, 1893 and the Arlington Club will give an entertainment and ball at the Lexington Avenue Opera House March 24.

The following are the officers of the Hospital elected for the coming year: President, Jonas Weil; First Vice-President, M. Peabody; Second Vice-President, S. Jarmulowsky; Treasurer, Leo Hutter; Secretary, M. Levin; Board of Managers, K. Mandel, Dr. S. Lloyd, H. Rosenthal, L. Hershfield, Philip Freund, Ignatz Boskowitz, M. Foster, J. Oshinsky, E. Arnstein, A. Rittmeister, Jonas Weil, E. Cahn, Louis S. Strook, M. Peabody, J. Rieser, H. Oppenheim, M. Valentine, Leo Hutter, G. Hyman, Aaron J. Bach, Ignatz Schultz, N. Hutkoff, J. Gutterman, M. Levin, G. Rosenblatt, J. Ducas, S. Jarmulowsky, Morris Jacobi, Israel Levy, Dr. Ralph Waldo; Religious Advisory Board, Dr. Drachman, Chief Rabbi Joseph, the Rev. Philip Klein, A. Rittmeister and J. Oshinsky.

French Hospital in San Francisco.—The corner stone of the new French Hospital in San Francisco, was laid with appropriate ceremonies February 25. The various French civil and military organizations formed in line at the headquarters of the French Mutual Benevolent Society, at Jackson and Montgomery Streets. The line of march was from Jackson, on Montgomery, to California, Kearny, Market, O'Farrell to Stockton and Union Square. Conveyances took the participants in the parade from that point to Central Avenue, where the line of march was resumed out Point Lobos Avenue. There were three divisions in the procession. H. S. Martin was the president of the day, and the French Consul, M. de Lallande, the honorary president. Daniel Levy delivered an oration in the French language and W. S. Barnes, the District Attorney, made an address in English. Singing and other music were provided and a bountiful collation was served.

German Hospital, Kansas City, Mo.—The medical staff of the German Hospital of Kansas City held its annual meeting February 25. Dr. Block, chief of the medical staff, read an exhaustive report of the work accomplished during 1893, which he declared was the most successful year in the history of the Hospital. The Hospital Society now numbers 200 members and is financially in good condition. During the past year 345 patients were treated at the Hospital, of which number 276 were paying and sixty-nine charity patients. The charity patients received 1,767 days' treatment at an expense of $1,515.55. The total expenses for conducting the Hospital were $7,360, of which $5,380 was contributed by paying patients. A benefit concert by the Arion Quartette was given last May, at which $710 was realized for the Hospital, and the balance necessary to meet the expenses of the institution was collected from membership fees and individual contributions by members.

Nine Sisters of Charity, of the Franciscan order, are employed as nurses, and the Hospital is in charge of an able medical staff. During the year a splendid new operating room has been fitted up at a cost of $350, and other improvements have been made at a cost of $250. The Society is very proud of its Hospital and the manner in which it is conducted, and invites those interested to call at any time and personally inspect it.

They Were Fond of Aprons.—The annual fete of the Malden (Mass.) Ladies' Hospital Association was held February 21, and its success financially will undoubtedly, after a mighty effort, exceed its social significance, which is almost an impossibility.

Mrs. U. B. Campbell, the Association's President, with the combined efforts of her husband, gave the members and friends of the Association a most excellent "Welcome" at their home on Salem Street, Maplewood, where the "Tea" was held.

The house was elaborately and yet tastefully decorated with palms, ferns, potted plants, cut flowers and scores of colored lights of all descriptions, which presented a most beautiful spectacle, while the air was filled with the sweet odor of flowers. Mr. Bennett's orchestra rendered the most bewitching bits of musical selections, which impressed those in attendance with the enchantment of the scene. There were 700 invited guests.

The feature of the evening was the novel way resorted to in raising funds for the Hospital. The ladies had an inexhaustible supply of plain, fancy and in fact every conceivable kind of an apron on hand; and the men were asked to purchase as well as the ladies, and all did so gladly. As a result of this so successful affair the men of Malden may possibly soon appear in full evening dress wearing fancy stitched aprons.—*Boston Journal.*

THE PUBLIC SERVICES.

Army Changes. Official list of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from February 24, 1894, to March 2, 1894.

A board of medical officers, to consist of: Major JOSEPH K. CORSON, Surgeon; Major WALTER REED, Surgeon; Capt. JULIAN M. CABELL, Asst. Surgeon, is by direction of the Secretary of War appointed to meet at the call of the President thereof, at the Army Medical Museum Building, Washington, D. C., for the examination of First Lieut. PHILIP G. WALES, Asst. Surgeon, to determine his fitness for promotion. Lieut. WALES will report in person to the President of the Board at such time as he may designate.

Capt. GEORGE T. BEALL, Medical Storekeeper, retirement from active service on the 25th of February, 1894, by operation of law, under the provisions of the Act of Congress approved June 30, 1882, is announced. By direction of the President.

Capt. REUBEN L. ROBERTSON, Asst. Surgeon U. S. A., leave of absence granted is extended one month.

Major JOHN BROOKE, Surgeon U. S. A., retired from active service Feb. 22, 1894.

First Lieut. ASHTON B. HEYL, Asst. Surgeon, relieved from duty at Ft. Niobrara, Neb., and ordered to Columbus Bks., Ohio, for duty at that depot, on the arrival of First Lieut. THOMAS S. BRATTON, Asst. Surgeon, at Ft. Niobrara, Neb.

Major EDWARD B. MOSELEY, Surgeon U. S. A., leave of absence granted on surgeon's certificate of disability, is extended one month on surgeon's certificate of disability.

Col. BERNARD J. D. IRWIN, Asst. Surgeon General U. S. A., is granted leave of absence for twenty days, to take effect upon the adjournment of the Eleventh International Medical Congress to be held at Rome, Italy, March 29 to April 5, 1894.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the week ending March 3, 1894.

P. A. Surgeon RICHARD ASHBRIDGE, dismissed from the Naval Service Feb. 28, 1894, by the President's approval of the sentence of general court martial.

P. A. Surgeon A. G. CABELL, ordered to the U. S. S. "Michigan."

P. A. Surgeon J. S. SAYRE, detached from the U. S. S. "Michigan," and ordered to the Naval Hospital, New York.

Asst. Surgeon R. G. BRODERICK, detached from the Naval Laboratory and Department of Instruction, and ordered to the Naval Hospital, Mare Island, Cal.

LETTERS RECEIVED.

(**A**) Atkinson, W. B., Philadelphia, Pa.; Allen, Dudley P., Cleveland, Ohio.

(**B**) Bartleson, S. P., Clifton Heights, Pa.; Brownback, H. O., Ashland, Ill.; Barnes, J. S., Milwaukee, Wis.; Brown, Philip K., San Francisco, Cal.; Blakiston, P. Son & Co., Philadelphia, Pa.

(**C**) Collins, R. G., Chicago, Ill.; Conner, Milton C., Middletown, N. Y.; Campbell, W. H., Cincinnati, Ohio; Cockran, Jerome, Montgomery, Ala.; Coulter, J. H., Summitville, Iowa; Chappell, J. W., Tennallytown, D. C.; Curtis, G. Lenox, New York City; Cutter, E. and J. A., New York City; Cleaves, M. A., New York City.

(**D**) Dunglison, R. J., Philadelphia, Pa.

(**E**) Eastman, Thos. B., Indianapolis, Ind.

(**F**) Fee, Chas. E., St. Paul, Minn.; Fox, P. R., Madison, Wis.; Formento, Felix, New Orleans, La.; Ferguson, E. D., Troy, N. Y.

(**G**) Genoway, Chas. V., Wallace, Idaho; Griffiths, L. M., Bristol, England; Greene, Geo. H., Marshall, Mich.; Grafton, J. J., Chicago, Ill.; Gamble, W. E., Chicago, Ill.

(**H**) Hawkes, W. H., Washington, D. C.; Hummel, A. L., Philadelphia, Pa.; Hoar, Geo. F., Washington, D. C.; Harrington, Mark W., Washington, D. C.; Hendrick, J. G., Centre Point, Texas; Heaton, J. E., New Haven, Conn.; Hotz, F. C., Chicago, Ill.

(**K**) Kennedy, T. C., Shelbyville, Ind.; Kirkley, C. A., Toledo, Ohio; Kinney, J. E., Utica, N. Y.

(**L**) Larkin & Scheffer, St. Louis, Mo.; Lobingier, A. Stewart, Denver, Col.; Lewis, Denslow, Chicago, Ill.

(**M**) Mussey, W. L., Cincinnati, Ohio; Michael, L., Wood River, Neb.; McArthur Hypophosphite Co., Ansonia, Conn.; Montgomery, E. E., Philadelphia, Pa.; Mutual Printing Co., Atlanta, Ga.

(**N**) Newark, W. C., Charlotte, Mich.

(**P**) Platt, H. B., New York City; Pett, A. M., Milwaukee, Wis.; Pearman, S. M., Clinton, Mo.; Parker, M. G., Lowell, Mass.; Parkinson, James H., Sacramento, Cal.; Pfeifer, C. W., Sheboygan Falls, Wis.

(**R**) Richards, W. M. L., Philadelphia, Pa.; Reed, A. A., Brookline, Boston, Mass.; Rauch, J. H., Lebanon, Pa.

(**S**) Sell, E. H. M., New York City; Santa, Prosper De Pietra, Paris France; Stowell, Chas., Washington, D. C.

(**T**) Trowbridge, L. S., Detroit, Mich.; The Seybold Machine Co., Dayton, Ohio; Thielhoff, J. H., Largo, N. M.; Taylor Brothers Company, Rochester, N. Y.; The Green Chemical Co., Philadelphia, Pa.

(**W**) Wyman, Hal C., Detroit, Mich.; Wire, S. E., Chicago, Ill.; Waugh, W. F., Chicago, Ill.; West Baden Spring Co., West Baden, Ind.; Ware, C. D., Pokegama, Cal.; Winn, Chester A., Loami, Ill.; Wilkinson, George, Omaha, Neb.; Woods, J. H., Brookline, Mass.; Watkins, W. W., Moscow, Idaho; Wegge, Wm. F., Winnebago, Wis.; Woodbridge, J. E., Youngstown, Ohio.

PAMPHLETS RECEIVED.

Annual Address before Fellows of the Connecticut Medical Society. By C. B. Newton, M.D.

Cleft of the Hard and Soft Palates. By J. Ewing Mears, M.D.

Naso- or Retro-Pharyngeal Growths. By J. Ewing Mears, M.D.

Castration of Sexual Perverts. By F. E. Daniel, M.D.

Case of Supra-Pubic Cystotomy, etc. By W. W. Keen, M.D.

Four Cases of Brain Tumor. By W. W. Keen, M.D.

Critique of Macroscopic Examination of Specimens Removed in Thirty-two Consecutive Laparotomies. By F. Byron Robinson, M.D.

Tait's Perineal Flap Operation. By F. Byron Robinson, M.D.

Medico-Mechanical Gymnastics; Its Method, Importance and Application. By Alfred Levertin, M.D.

Longevity, with a List of Persons Known to have Lived 100 Years or More. By Archer Atkinson, M.D.

Some Reasons for the Performance of Circumcision on all Male Infants. By Alex. L. Hodgdon, M.D.

The Sympathetic Nervous System as the Elective Point in Influenza. By W. T. Eckley, M.D.

The Successful Management of Inebriety without Secrecy in Therapeutics. By C. H. Hughes, M.D.

Surgical Treatment of Tumors of the Neck. By Thos. H. Manley, M.D.

Cocain Analgesia in the Treatment of Hemorrhoids, of Ulcers, Fistulæ and Fissures in the Ano-Rectal Region. By Thos. H. Manley, M.D.

Studies and Methods in Supra-Pubic Hysterectomy. By Joseph Eastman, M.D., LL.D.